RECOVERY FROM A HEART ATTACK: PSYCHOLOGICAL HAZARDS AND COPING RESPONSES OF MIDDLE AGED AND ELDERLY PATIENTS AND SPOUSES

by

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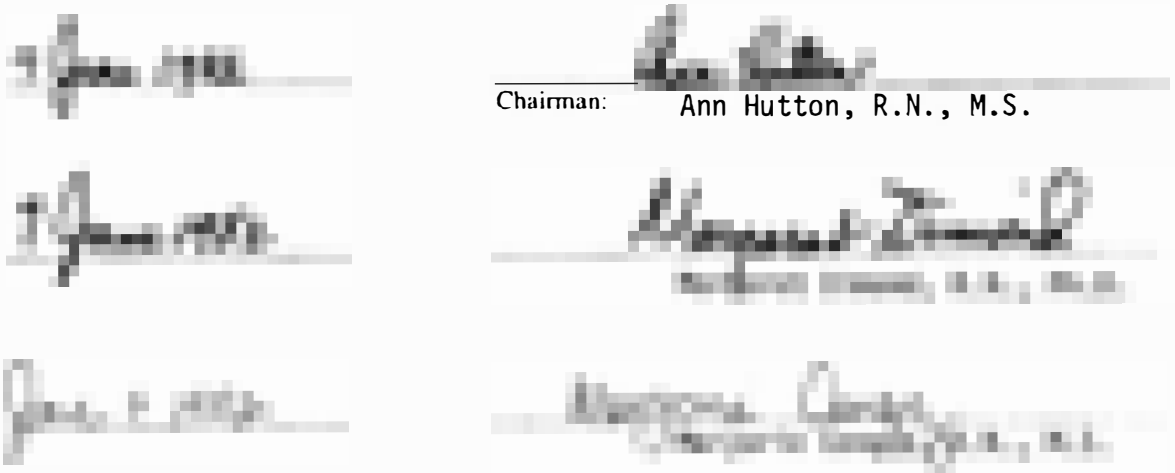

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ABSTRACT

This study describes, quantifies, and compares sources of stress and coping responses of 40 heart attack patients and 32 spouses and examines whether there are age differences in stress appraisal and coping responses. Lazarus' cognitive-phenomenological paradigm of psychological stress, developmental lifespan theories and family systems theory provide the theoretical framework. Stress and coping are assessed by a card sort technique administered six months following the patient's heart attack. The design is both descriptive and correlational. Age differences in sources of stress were found for patients and spouses. Both patients and spouses used a mixture of problem-focused and emotion-controlling coping responses. However, there were no age differences in type of coping responses used. Select study variables explained 13% of the variation in patient stress scores and 72% of the variance in spouse stress scores. Recommendations for further study for nursing practice are given.

CONTENTS

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CHAPTER I

PROBLEM STATEMENT

Recent years have seen a marked increase in concern by health professionals with the psychological aspects of recovery from a heart attack. While improved hospital treatment and the advent of coronary rehabilitation programs have contributed to higher survival rates, many patients and family members face considerable emotional distress and adjustment problems in the recovery period which threaten their quality of life and overall well-being. The patient must deal with pain and strange symptoms while facing sudden termination of customary lifestyles. For those individuals who have been healthy all their lives, requiring assistance from others can be a shock to their sense of security and self-image. Ever present fears of dying or having another heart attack precipitate feelings of vulnerability and helplessness. There is often disruption of family life, friends, social groups and work circles, and uncertainty about one's capacity to reenter these circles. For family members a sudden heart attack (myocardial infarction - MI) may engender fear and anxiety regarding the patient's survival. It may also necessitate changes in role responsibilities and alterations in lifestyles.

Consequently, a considerable amount of coping effort may be required to deal with the unending demands of the illness. In addition to habitual ways of coping with stress that develop over a life time, patient and family members may also need to develop new or novel coping skills to ensure optimum physical and psychological adjustment.

Clinical observations of MI patients suggest that despite similarities in physical condition, patients and family members differ greatly in their adjustment to the illness. Some patients and family members look upon the experience as a challange and opportunity to adopt healthier lifestyles and improve interpersonal relationships. Others experience extreme psychological distress with marked family discord leading to the permanent adoption of the sick role and the creation of a "cardiac cripple." Investigators interested in stress and coping have hypothesized that important mediating factors in adjusting to a major life crisis are differences in how individuals appraise the situation and the differences in coping efforts that are mobilized in response to the stressful event (Lazarus, 1981).

In the past, researchers and clinicians have focused mainly on the relationship between the onset of a heart attack and physiological and psychological outcomes. The mechanisms that link these factors, namely a person's subjective appraisal of the situation and the type and perceived effectiveness of coping responses are not well understood. Much information concerning the nature of stresses confronting patients and families has

come from behavioral observations in the hospital environment and the interpretation of psychological tests. Consequently, there is much inconsistency in the literature regarding the different types of stresses patients and family members face while recovering from a heart attack. There have been some attempts to measure patients' subjective appraisal of stress using global self-report stress scales. However, while such scales measure patients' perception of the intensity of stress, they neglect to elicit the person's perception of what is stressful about the situation. Thus valuable information which could guide intervention strategies is lost as a result of assessing stress as a simple dichotomous variable measuring the presence or absence of distress. A second problem arises when such scales are supplied with anchor points. The assumption is that the various aspects of the stressful situation constitute a properly ordered scale. Clinical experience suggests that self-ratings often do not correspond with verbal reports. A person who reports considerable stress may rate him/herself at the mid-point of a stress scale. In developing the Hospital Stress Rating Scale, Volicer and Burns (1975) found that some subjects resisted assigning numbers to events. Age and educational background were given as explanations. Younger subjects were likely to be more educated and perhaps more willing to play the abstract game of assigning numerical scores to stressful events.

Despite the growing consensus that coping skills play a central role in the effectiveness of an individual's response to stress, no systematic investigations have been conducted which classify coping responses of heart attack patients and family members. The prevalent use of denial and minimization by heart patients has been documented by several researchers and clinicians. However, the degree to which other coping skills; e.g., problem solving and emotional catharsis, aid in the psychological adjustment to the illness is not known. To better understand the adjustment process of recovery from a heart attack, objective tools need to be developed which measure an individual's subjective appraisal of the various types of stress and operationalize and classify coping responses.

The timing of a stressful event in the life-cycle is also thought to be an important mediating factor in the adjustment process. Preliminary work investigating the impact that cancer has on individuals suggests that people at different life stages appraise its' onset differently and employ different coping strategies (Mages & Mendelson, 1980). The importance of age however, as a mediating factor in determining the impact of a heart attack, has gone unrecognized. In the majority of studies, individuals over the age of 60 have been excluded from investigation. This lack of interest is surprising not only because of the well-documented vulnerabilities of older people to stress, but because of the prevalence and significance of heart disease in old age. Rodstein (1979) reported that 72 percent of all

cardiovascular deaths in the United States, the majority due to myocardial infarction, occurred in those over 65 years of age. As the number one cause of death, heart disease accounts for over one-third of all deaths in the elderly. Biorck (1968) found mortality rates from a myocardial infarction to be 33 percent at age 60 to 69, 47 percent at age 70 to 79 and 64 percent in those 80 years and older.

The goal of gerontological nursing research is to provide a sound basis for nursing care of older people. To accomplish this goal, however, nurses must not blindly accept research findings that have been obtained on other age groups of patients and simply apply them to older people. With the proportion of the population over 65 increasing and coronary heart disease being the leading cause of death in older people, nursing care should be directed towards assisting older heart attack patients and family members to cope with, and adapt to the illness in an effort to achieve or maintain as high a level of wellness as possible. By systematically assessing individuals' perceptions of stress and coping responses, nursing intervention strategies can be formulated to not only reduce actual or potential sources of stress but also to strengthen and encourage adaptive responses and enhance adaptive capacities. Furthermore, an understanding of these mechanisms will also provide insight into more general ways in which psychological processes can influence health.

The purpose of this study, therefore, was twofold: to describe, quantify and compare perceived sources of stress and

coping responses used by patients and spouses during recovery from a heart attack; and to determine whether or not stress appraisal and coping responses vary according to age.

Review of the Literature

Potential Stresses and Emotional Response During Recovery

Only in recent years has a substantial amount of research effort been directed towards better understanding of the psychological aspects of recovery and rehabilitation from a heart attack. Klein and his associates (1969), showed strikingly high correlations between the psychological state of the survivor, catecholamine excretion, and occurrence of complications following an MI. Others have demonstrated significant relationships between emotional status during recovery and long-term disability and mortality (Bruhn, Chandler & Way, 1969; Garrity & Klein, 1971; Pathy & Peach, 1980). Clinical and research literature enumerate many "potential" emotional, interpersonal, environmental, social and occupational stresses as well as the more commonly recognized physical stresses which impinge on the MI patient and family during the course of recovery. The word "potential" is used because the relevance and importance of these stresses vary with the severity of illness, the patient and the treatment setting.

Hackett and Cassem (1975) described three transition phases during the course of recovery which serve as convenient categories for reviewing existing literature. These transition periods termed "rites of passage" include: 1) the pre-admission phase; 2)

hospitalization phase including the emergency room, Coronary Care Unit (CCU) and ward experiences; and 3) the post-discharge convalescent phase.

Pre-admission phase. Unrelenting physical distress is the hallmark of the pre-admission phase. Severe crushing chest pain, weakness, nausea, diaphoresis and shortness of breath predominate (Croog & Levine, 1969; Moss & Goldstein, 1970; Hackett & Cassem, 1975). Yet it is not uncommon for such symptoms to be absent or of diminished intensity in reports of older people. Atypical symptoms such as vague, pressure-like discomfort in the chest, abdominal pain and epigastric distress accompanied by shortness of breath and weakness account for the high incidence of unrecognized infarctions in older people (Caird & Dall, 1978; Price, 1981). Denial and minimization of the seriousness of symptoms are common responses in this initial phase which result in a delay in seeking medical advice or even of informing family members of existing distress (Hackett & Cassem, 1969; Olin & Hackett, 1964). While denial may serve a useful purpose in momentarily reducing fear and anxiety brought on by the onset of symptoms, it also reduces the chances for proper medical attention and thus survival. Unavailability of physician, and transportation difficulties, however, have also been found to contribute to delay (Moss, Wynar & Goldstein, 1969). In two studies, age was found to be an important variable determining arrival time at the hospital. Older people take considerably more time seeking medical help than younger patients

(Alonzo, 1973; Moss & Goldstein, 1970).

During their husbands' onset of symptoms, spouses are often uncertain whether to seek help or simply reassure their husbands (Skelton & Dominion, 1973), and are often less influential than friends in the decision to seek medical attention (Hackett & Cassem, 1969).

Hospitalization phase. The majority of clinical and research literature focuses on potential stresses confronting the patient during his or her hospital stay. In the emergency room, patients are exposed to unfamiliar caretakers, intrusive diagnostic procedures, uncertainty about diagnosis and future treatment, and worry about how family members are reacting to their crisis (Gruen, 1975). Continued physical distress can be extreme and the possibility of imminent death heightens anxiety and fear during this time.

Once in the CCU, the patient is exposed to a whole host of potential stresses: confinement to bed, monitoring of bodily functions by others, physical discomfort especially chest pain, gastrointestinal distress and altered mental states brought on by drugs or metabolic disturbances, noise, separation from familiar people and places, and the witnessing of complications of other patients (Kornfeld, 1969; Hackett, Cassem & Wishnie, 1968; Sczakalla, 1973; Bruhn, Thurman, Chandler & Bruce, 1970; Graham, 1969; Cay, Vitter, Philip & Dugard, 1974; Woods & Falk, 1974). However, Hackett and his associates (1968) reported little serious or prolonged upset caused by what might be

considered provocative circumstances, e.g., being attached to monitors or frequently being examined. For many, coronary care is reassuring, providing an atmosphere of safety and security (Graham, 1969; Cay et al., 1974). Dominion and Dobson (1969) found both seriously ill patients and lower class patients were significantly less reassured by the unit than less ill patients and middle or upper class patients. Transfer to a general ward may provoke a transient anxiety but in general, patients welcome the opportunity to increase their activity and rid themselves of monitors, I.Vs, and the high pace of the coronary care unit.

A consistent emotional response pattern has been identified in the hospital phase. It includes denial, anger, anxiety, repression, fear of dying and invalidism, and depression (Hackett & Cassem, 1968; Andreoli, Fowkes, Zips & Wallace, 1975). Patients frequently question: "Will I live? Will I work? Will I thrive?" Cay et al. (1974) reported 62 percent of 203 MI patients interviewed suffered from anxiety and depression of clinical proportions during hospitalization. Anxiety is higher on admission, and peaks on or about the second day (Dillspeani, Cay, Philip, Vetter, Collins & Donaldson, 1976). However, anxiety tends to rise again prior to discharge when the patient faces the uncertainties of going home. There is concern about what one can do safely upon returning home; forced dependence on family members; uncertainties as to how to interpret bodily signs; and whether or not one can withstand temptations to return to their former way of life (Mullen, 1978). Several authors concede that there is also a sex-role related

tendency in reporting emotional states following an MI. Women report greater anxiety than men. Neurotic predisposition and severity of illness were other factors found to be associated with higher anxiety levels (Vetter, Cay, Philip & Strange, 1977; Byrne & Whyte, 1979). Similarly, depression or feeling "blue" is evident early during the hospital stay. It peaks on the sixth or seventh day, but persists several months into the recovery (Hackett & Cassem, 1968; Mayou, Williamson & Foster, 1978). Loss of bodily function, damaged self-concept, e.g., "I am less of a person," and threat to life frequently precipitate feelings of sadness and grief. Mood alterations, i.e., anger, irritability, frustration, oversensitivity, may all be seen as signs of depression. Also sleep disturbances related to psychological distress and unrelated to environmental stimuli are common, especially in the CCU (Broughton & Baron, 1978). Increased frequency and severity of stressful life events found in MI patients up to one year prior to the infarction suggest ongoing family and work conflicts may also be potential stresses confronting patients during their hospitalization (Theorell, 1974; Byrne & Whyte, 1980).

While the nature of psychological stresses confronting the hospitalized MI patient has been examined extensively in recent years, family members have not been given the same consideration. Only four authors address the family's reaction to the illness during hospitalization, two of which are research studies. Feelings of shock, fright, disbelief, numbness and helplessness

of family members are described by Gardner and Stewart (1978). Mayou and associates (1978c) interviewed 12 wives while their husbands remained hospitalized and reported only 5 percent denied any anxiety and 38 percent were "moderately" or "severely" distressed. Many wives were facing practical problems such as how to manage extra household chores and continue to visit frequently with their spouse. Inability to use the car and difficulty making arrangements with children were also reported. Yet most wives found neighbors willing to help out. Similarly, Stern and Pascale (1979) found the majority of wives they interviewed to be anxious and depressed. Although the sample was small, wives' major concerns centered on the patient's survival, economic viability of the family and the cause of their husbands' infarction. Skelton and Dominion (1973) reported many spouses blamed themselves for their mate's illness and were desperately searching for a cause. Feelings of loss, depression and guilt were more common in wives under 45 years of age and in those with a history of psychiatric disturbances. At the time of discharge Rahe (1975) reported most wives were apprehensive about their ability to provide an adequate diet for their husband and expressed concerns about his ability to follow medication and physical activity prescriptions.

Numerous shortcomings need to be considered in interpreting previous research studies. First, methodologies used to describe stresses have several conceptual flaws. Methods which have been

utilized include: 1) descriptive studies, examining stresses which primarily come out of the environment (behavioral observations), interviews and questionnaires about stressful events, and 2) psychological assessments of affective states (anxiety, depression) at a particular time in the hospitalization. These methods present problems in defining what is stressful for MI patients. Knowing the sequence of events and characteristics of the hospital environment says nothing of how the individual appraises and interprets events. Although CCU is externally much the same for all patients, the threat appraisal of the environment will differ from patient to patient. In the few studies which did employ measures dependent on the patient's appraisal, problems with "selective amnesia" (Hackett & Cassem, 1975) may occur. The emotional upheaval caused by the recollection of stressful events so close to their occurrence may be threatening and result in decreased accuracy in reporting of events. In those studies using psychological assessments, the individual's general response was defined but the underlying causes and the extent to which the patient could identify them were not evaluated. Second, systematic biases affected the selection of patients and the conduct of interviews. Patients over age 60 were excluded in the majority of studies and reactions of female patients were not examined.

Post-hospital convalescent phase. A relatively small number of quality empirical studies have focused on the nature of stresses and emotional responses during the third transitional phase, from

hospital to home. It is during this time individuals characterized as being ambitious, aggressive, impatient and with excessive dedication to their work (Friedman & Rosenman, 1974; Jenkins, 1971) suddenly find themselves home, bored with inactivity, facing problems of home routines, and trying to cope with changes in family, social and work relationships. As Mayou (1979) emphasized, a patient's reaction to a heart attack is based not only on physical limitations imposed by a healing heart, but by beliefs about the extent that the illness will have on altering his or her way of life and personality. Their quality of life depends on how well a person maintains a balance among dependency, autonomy, and interdependency.

Physical symptoms, e.g., shortness of breath, weakness, mild chest discomfort, and fear of pain, another infarction, or complications requiring readmission to the hospital and the possibility of death are frequent concerns during the first few weeks at home (Rahe, Tuffli & Sudhor, 1973; Mayou et al., 1978a). Worries about changes in physical activity and work capability, acceptance by family, sexual adequacy, modification in smoking and drinking habits, and recurrent heart attack with possible death may become overwhelming (Wynn, 1967; Adsett & Bruhn, 1968; Rahe et al., 1973; Mayou et al., 1978 a,b). Wishnie, Hackett and Cassem (1971) found emotional problems during convalescence to seriously hamper rehabilitation. Twenty-four patients were interviewed between three and nine months after discharge. Eighty-seven percent of of the patients rated themselves as anxious or depressed or

both during the first month at home. The majority complained of feeling frustrated at being inactive and only three were able to turn to hobbies for relaxation. Sleep disturbances were very common. Also, considerable anxiety was evidenced in family members. Wives, in particular, were overprotective of their husbands in aggressive ways. Many felt guilty for somehow being responsible for their mate's illness. Serious marital conflicts were present, but many wives feared expressing any anger, which they believed might bring on another attack. Krop (1971) and his associates administered an extensive questionnaire to 100 married male patients on the day of discharge from the hospital. Fifty-one percent of the patients expressed concern that their marital relationship would be affected by their cardiac condition. In contrast, only 11% reported being concerned before the attack. Similarly, Rahe et al. (1973), in group therapy, observed frequent adjustment problems in patients due to greater family involvement, especially oversolicitous wives who threatened their male ego; problems assuming the "patient role" and inadequate information regarding the amount and type of physical activity that could be done safely.

The most detailed account of psychosocial adjustment during the post-hospitalization phase was done by Mayou and his associates (1978a, 1978b). A hundred patients suffering from a first myocardial infarction were interviewed at discharge, two months, and one year regarding certain outcome measures. At two months, physical symptoms, mainly pain and shortness of breath, plagued

65% of the patients. Over half reported suffering from emotional distress, with reports of anxiety and depression usually associated with complaints of irritability, poor concentration and fatigue. Ninety percent were less active than before the heart attack, and 31% made significant changes in their lifestyle. The majority of subjects were satisfied with their physician, yet only a little more than half the patients could recall any instructions by their doctor regarding lifestyle changes. When questioned about their beliefs as to the implications of the illness for their future lives, 60% thought they would reduce leisure activities, and only 20% intended to reduce stress.

At one year, two-thirds of the sample complained of at least one symptom. Others described feelings of lassitude, that they "just were not the same." Psychological distress was still considerable, with 64% reporting moderate to severe symptoms of anxiety and depression. Over 90% of those working before their heart attacks returned to their jobs, 60% returned by 12 weeks. Frequency of social contacts did not change. A few couples reported severe strain, but far more experienced an improvement in their marriages. However, one fourth of the patients felt less satisfied with their roles in the family, and some recalled feeling humiliated at watching their wives do men's chores. Others were frustrated at seeing their wives doing jobs poorly.

Following a heart attack, the majority of patients return to some level of sexual function. Hellerstein and Freidman (1970) found the level of sexual activity (number of orgasms per week)

during the first year following an MI to be approximately 80% of what it was prior to the illness. Decreased sexual desire, depression and reluctance on the part of the spouse for fear of precipitating a recurrence of an MI or "coital" death were reasons cited for the decline. Papadopoulos, Larrimore and Cardin (1980) also reported inadequate sexual instructions following the infarction and preexisting sexual difficulties with spouses as contributing to the decline. In addition to a decreased frequency, premature ejaculations, erectile difficulties and impotence affecting the quality of sexual activity were reported by Tuttle and his associates (1964). Abramov (1976) studied sexual activity in female patients and found sexual frigidity and dissatisfaction in 65% of the subjects as compared with 24% of age-matched controls who were hospitalized for reasons other than cardiac problems. However, there is some indication that the decline in sexual functioning after a heart attack may not be a concern for some. In Mayou's study, over half of the subjects reported a decrease in frequency of sexual activity one year after infarction. Yet few patients or spouses reported being less satisfied. Furthermore, in a number of marriages, one or both partners were pleased with the reduction.

Finally, potential sources of stress during recovery stem from occupational adjustment. Rahe et al. (1973) found return to work was particularly stressful and often accompanied by "regression," with resumption of smoking, weight gain and abuse of exercise. Few people change jobs as a consequence of their illness,

and there is less evidence to suggest any lessening of work as a result of the coronary episode. Sharland (1971) found that post-MI patients ended up working between 44 and 72 hours per week after their infarction, even though 61% stated that they tended to take things easier upon returning to their jobs. Age, however, is the most consistent and significant determinant of return to work. Studies show that virtually all patients below 45 years of age return to some kind of employment, while a little over half of the subjects over 65 return. In fact, many older persons see their heart attacks as opportunity for early retirement and welcome the change (Nagle, Gangola & Picton, 1971; Fisher, 1970).

It is generally well known that families can have a great influence on the rate of convalescence. However, few investigators have studied how family members perceive events associated with recovery. In 1968, Adsett and Bruhn conducted short-term group therapy for wives of ten patients who were having difficulty with post-MI adaptation. They were found to be frequently anxious and depressed. Many were overprotective of their mates and expressed feelings of guilt for somehow causing their husband's attack. They were generally inhibited in expressing their concerns regarding their spouse's recovery and frequently denied their own needs. New, Ruscio and Priest (1968) found the entire family, including children, feeling guilty and tending to overprotect patients during the course of their recovery.

A more recent study by Mayou et al. (1978) found main con-

cerns of wives to be lack of specific information about how much their husbands could do without overexerting and the problems related to mates' emotional feelings, i.e., irritability, depression and anxiety, during convalescence. However, only 10% expressed dissatisfaction in assuming additional responsibilities around the house. Croog, Koslowsky and Levine (1976) commented on the importance of preinfarction family relationships as a predictive variable of family adjustment. Families with good integration and role flexibility were found to have the greatest ability to cope with a heart attack.

Age-related differences. No studies examined the nature of events perceived stressful by older people recovering from a heart attack. In a few studies, age has been found to be a meaningful variable in outcome; however, the findings are contradictory. Rosen and Bibring (1966) studied emotional response of 50 hospitalized males, 35-67 years of age, three weeks after hospitalization. Heart patients over 60 experienced much less disturbance than patients in their fifties. Sixty-eight percent of the 50-59 year olds were depressed compared with only 20% of those over age 60. The authors suggested that the older group, by virtue of their age, have a more passive position towards life. When confronted by the limitations imposed by a heart attack, they are better prepared for being a patient. Men in their late fifties, however, might be more vulnerable to the psychological impact of an MI because they are highly vested in being active and still cling to their autonomy. In contrast, Goodman (1972) found that older

patients (over age 60) expressed the most feelings of impairment and depression, both at discharge and four months later. Patients in their fifties experienced a crisis initially, but were less likely to report anxiety and depression in the followup period. Men 50 years or younger showed little difficulty at first but expressed more depression than men in their fifties. Dovermuehle and Verwoerdt (1962) found no age differences in depression among hospitalized cardiac patients. However, only two age groups were compared: 35-49 years and 60 years and older.

In summary, studies examining psychological reactions of MI patients in the posthospital period provide evidence of considerable anxiety and depression which persists months and sometimes years. Only a few psychotherapy studies have begun to elicit specific concerns of patients during their recovery. The majority have identified sources of stress related to a select number of outcome variables, e.g., return to work and sexual adjustment. The age of the patient has been considered in assessing affective states during recovery; however, no research has been done on social and psychological factors perceived by elderly patients as being stressful that relate to their overall adjustment. Finally, no studies have followed patients and spouses throughout the recovery period, both hospitalization and postdischarge periods, quantifying their subjective appraisal of stressful events.

Coping responses. Denial has been the most widely investigated coping response among MI patients. In 1968, Hackett and Cassem observed that denial of stress in the Coronary Care Unit

served the best interest of the patient both by reducing anxiety and depression and by bolstering hope. They hypothesized that denial was inversely related to the seriousness of the illness. Those patients who relied heaviest on denial were thought to live longer. Empirical data, however, do not support such claims. Two researchers found deniers to be less anxious in the Coronary Care Unit (Froese, Hackett & Cassem, 1975; Gentry, Foster & Honey, 1972) while Froese, Hackett & Cassem (1974) and Billing, Lindell and Sederholm (1980) found no difference in anxiety as a function of denial. All four studies reported no relationship between depression and denial in the Coronary Care Unit.

Similarly, little substantial evidence exists supporting the denial-longevity hypothesis. Gentry et al. (1972) found that the two deaths which occurred in their 16 person sample were non-deniers. Hackett et al. (1968) reported that two of the four deaths in this sample of 50 patients were of minimal deniers. Neither study had enough participants to properly apply statistical tests. Regarding the seriousness of illness and the use of denial, Levine and Zegler (1975) compared groups of stroke, lung cancer and heart disease patients on the degree of denial. Contrary to Hackett's hypothesis, they reported that patients with more severe illness used more denial. Additional findings which showed denial was unrelated to the observed low degree of satisfaction with health, suggested that denial was not helpful for any of the patient groups. In fact, in followup studies, denial has been related to long term resistance to compliance with medi-

cal regimes (Croog et al., 1971).

The different methods of assessing denial in the above papers may account for the discrepancy between the increased frequency of denial in the clinical papers and the decline reported in the research studies. MI patients may avoid discussing troublesome feelings about their illness during brief interviews or while taking paper and pencil questionnaires. During more intense personal contacts where a supportive and trusting relationship develops, patients more readily may disclose emotionally distressing issues.

Age differences in coping responses of MI patients in Coronary Care Units were observed by Millman and his colleagues (1977). Eighty-one patients admitted to a Coronary Care Unit participated in group therapy. Younger patients characteristically responded with denial and behavioral management problems; middle-age patients were more depressed and anxious; and older patients were reported to have coped best. The investigators, however, failed to report how they coped better. Denial is only one mental mechanism that can be used to alleviate or minimize distress. Other emotion-controlling responses, e.g., rationalization, cognitive restructuring, or problem-solving tactics such as the use of social support, have not been assessed in heart attack patients. No systematic attempts assess coping responses of spouses nor look at age as an important discriminating variable.

Theoretical Framework

The theoretical framework for this study incorporated

theories and research from Lazarus' cognitive-phenomenological paradigm of psychological stress, developmental life-span theories and family systems theory.

Paradigm of Psychological Stress

Lazarus (1981) challenges Selye's classical view that physiological stress reactions are a non-specific response to any noxious stimulus. In contrast, Lazarus argues that some stressful reactions may be mediated largely by psychological processes and may be somewhat specific, depending on which specific cognitive appraisals are used. The major theoretical tenet is transactional in that the person and environment are seen as an ongoing relationship of reciprocal action, each affecting and in turn being affected by, the other. Lazarus has identified two types of cognitive processes that mediate this relationship and play a central role in determining which events are stressful, the impact on the individual, the choice of coping pattern and the resulting subjective physiological and behavioral responses. These two processes are termed primary appraisal and secondary appraisal.

Primary appraisal. Primary appraisal involves a cognitive evaluation of the "transaction" between the person and his or her environment. The person appraises whether a situation is: a) harmful or a loss, referring to damage that has already occurred; b) a threat, referring to anticipated or future harm; or c) a challenge, where the focus is placed on a positive or potential gain. As Lazarus pointed out, "this appraisal is not a simple

perception of the elements of the situation, but a judgment and inference in which data are assimilated to a constellation of ideas and expectations" (1966, p. 44). Primary appraisal is dependent upon the individual's knowledge, beliefs and values, past experiences and emotional state.

Secondary appraisal. Secondary appraisal is an evaluation by the person of his or her coping capabilities, coping resources or options that may be open to the individual. It may or may not precede primary appraisal (anticipatory coping) or occur in reaction to a present or past confrontation with harm (Lazarus & Launier, 1978). Coping efforts serve two functions: a) to minimize, reduce, tolerate or master the threat itself; and/or b) regulate emotional distress. These two functions of coping have been recognized by others (Mechanic, 1962; Hamburg, Coelho & Adams, 1974; Murphy, 1974; Pearlin & Schooler, 1974). Lazarus refers to the former as an instrumental or problem-solving function and to the latter as a pallative function. For the heart attack patient, seeking medical attention, quitting a stressful job or following a prescribed exercise regime are all problem-solving efforts aimed at altering the troubled person-environmental relationship. On the other hand, sharing one's concern with family members, taking sedatives, denying or avoiding unpleasant aspects of the illness or reassuring oneself that things will work out are efforts that do not alter the threat but do regulate emotional distress. These two functions of coping are mutually facilitative. However, one function can seriously get in the way

of another. An example is when denial results in testing one's physical condition immediately following a heart attack by mowing the lawn to reassure oneself that nothing is seriously wrong.

Lazarus does not make a distinction between "defense mechanism" and coping efforts as Vaillant (1976), Haan (1977), and others have done. These authors view defenses as rigid, pulled from one's past, and reality distorting, while coping is seen as adaptive, flexible, oriented to reality and goal directed. It is difficult, if not impossible, to separate out coping efforts without making inferences (Murphy, 1974). Both interweave as people deal with life's difficulties. Instead, Lazarus views coping as a shifting process where the person may, at certain times, rely more heavily on one form of coping, say "defensive processes," than on other problem solving efforts. Defensive processes refer primarily to the emotion function of coping whose purpose it is to reduce tension and restore equilibrium. Studies on bereavement illustrate the process of coping. The bereaved individual initially refuses to accept the loss but through a process of mourning, where the individual oscillates between denial and reality testing, comes to terms with the loss. Conceptualizing coping as a constellation of problem-solving and emotion controlling efforts that may change over time, allows coping efforts to be operationalized and, therefore, quantified. Empirical data exist documenting the presence of both these functions in individual responses to stressful events in daily living (Folkman & Lazarus, 1980).

Whether coping efforts are adaptive or maladaptive depends on the type and intensity of effort as well as appropriateness to the situation (Cohen & Lazarus, 1980; Hamburg et al., 1974). Denying or minimizing the seriousness of a heart attack may be beneficial in the Coronary Care Unit to alleviate intense anxiety and depression. However, in long-term recovery, extensive use of denial has been shown to interfere with compliance (Croog et al., 1971).

Finally, a central factor in Lazarus' processes of cognitive appraisal is the emotional state of the individual. Emotional feelings may be present before or following cognitive appraisal and coping efforts; and the emotional state may also arise as a consequence of the appraisal process or as a consequence of coping. This system of interactions and feedback loops make it necessary to study all three components; primary appraisal, emotional states and coping efforts, in order to understand the impact a stressful event may have on an individual.

Influence of age on primary appraisal. From the perspective of adult development and aging, the stage of life a person is at when the illness ensues may be closely associated with what events are perceived as stressful and which are perceived as reassuring. According to Neugarten (1968), the timing and sequencing of life events are defined by normative factors. Age norms specify appropriate times for certain life events such as leaving home, marriage, bearing children and retirement. As individuals move through the life cycle, they are made aware of whether they are

early, on time, or late with respect to these norms through an informal system of positive and negative sanctions. Bourgue and Back (1977) noted that such events as the departure of children and retirement are perceived by respondents as most disruptive if they occur "off time" at non-normative ages. Similar findings have been reported with reference to the onset of a serious illness. Mages and Mendelsonn (1980) found that older adults differed from young and midlife adults when informed that they had cancer. Older individuals, especially those who had reviewed their past and felt that they had lived their lives well, dealt with their illness with a greater degree of equanimity than the younger patients. Active modes of coping as well as more overt and acute distress were more characteristic of younger than older patients. Cohen's (1980) research on breast biopsy patients produced similar results. Younger women were more upset and anxious about the need for a biopsy and cancer than older women. Cohen cites one 70-year old woman saying that she "had always wondered what I would die from, and now I know." Belief systems, values, knowledge level and motivations, all of which influence appraisal processes, change over the life span of the individual. The difference in developmental stages between young and older women, therefore, may greatly influence whether or not the onset of a serious illness is appraised as threatening, a challenge, or irrelevant.

Levinson and his colleagues have proposed a developmental theory of psychosocial periods during adulthood based on a biographical, longitudinal study of 40 men (Levinson, 1977a, 1977b;

Levinson, Darrow, & Klein, 1976). They identified five eras within the life span, each of roughly 20 years duration. These are not stages of biological, psychological or social development, but represent a life-cycle macrostructure. These eras are: pre-adulthood, age 0-20; early-adulthood, age 20-40; middle-adulthood, age 40-60; late-adulthood, age 60-80; and late-late-adulthood, age 80+. According to theory, eras are composed of series of developmental periods and transitions. Developmental periods are stable and last six to eight years. The primary task during developmental periods is to build a life structure. These tasks involve making certain crucial choices and striving to attain particular goals. Transition periods in an era, however, are often marked by confusion and unrest. They ordinarily last four to six years. During this time, the central task is "to terminate a time in one's life; to accept the losses that termination entails; to review and evaluate the past; to decide which aspects of the past to keep and which to reject; and to consider one's wishes and possibilities for the future" (Levinson, Darrow & Klein, 1978, p. 51). A heart attack may occur in early adulthood. However, they are more likely to occur in midlife or late-adulthood.

Early adulthood represents a period of exploration and provisional commitment to adult roles and responsibilities. Marriage and occupational choices are often crucial events during this time. The age range 28-33 represents a transition period and may be marked by turmoil and confusion; or it may involve a more quiet

reassessment and intensification of effort. Important changes in life structure and internal commitments are common and events such as divorce and occupational changes peak at this time. However, the thirties are usually characterized by stability and security. The individual makes deeper commitments to his or her occupation, family or whatever enterprises are significant to him or her. The major developmental issue during this time is to achieve a greater measure of independence and authority. As Levinson noted,

> . . .a key element in this period is the man's feeling that, no matter what he has accomplished to date, he is not sufficiently his own man. He feels overtly dependent upon and constrained by persons or groups who have authority over him or who, for various reasons, exert great influence over him (Levinson et al., 1976, p. 23).

During this time, having a heart attack, over which a person has virtually no control, may pose a serious threat to the young adult striving to achieve autonomy and control over his or her life.

The transition to midlife summons a constellation of specific psychosocial, interpersonal, biological and social systems tasks to be mastered. The transition may be smooth or involve considerable turmoil. However, the outcome is not dependent on an individual's previous success or failure in achieving goals. The issue, rather, is what to do with the feelings of disparity between what has been gained in life and what the individual wants for himself. Midlife issues include: acceptance of death and mortality; recognition of biological limitations and health risks, restructuring of sexual identity and self-concept; reorientation to work, career, creativity and achievement; and reassessment of

primary relationships. These developmental issues strikingly resemble tasks facing a heart attack patient during his or her recovery. Consequently a heart attack in early adulthood may contribute to an early onset of midlife as well as intensify the experience for the individual who is middle aged.

Developmental issues in late adulthood include: finding realistic substitute sources of gratification to replace age related losses; facing the realities of dying and modifying cherished lifetime goals aspired when younger in accordance with diminished capacity (Neugarten, 1979; Vaillant, 1977; Lowenthal, Thurnker & Chiriboga, 1975). A heart attack in later life may be perceived as "on time" and less stressful for the individual who has already dealt with physical decline, changes in the social and occupational sphere and one's own mortality associated with the aging process.

Age and coping resources. According to Lazarus' theory, appraisal and coping modes are dependent upon characteristics of the person and the environment. While a heart attack may be appraised as "on time" by an older person, physical and mental resources needed for effective coping diminish with age. Recent studies definitively emphasize that close, positive relationships facilitate good health and morale particularly in times of crisis (Cassel, 1976; Cobb, 1976). However, with advancing age, supportive frameworks and interpersonal relationships decline. Older people tend to belong to fewer groups, have fewer friends and see them less (Rosow, 1973). Likewise, older adults tend to function within a more constricted environmental context with decreased finances, social status and employment opportunity. Biologically, older

people face stressful situations with diminished homeostatic capabilities, enhancing their vulnerability to illness (Eisdorfer & Wilkie, 1977). Furthermore, recent studies suggest that over a life span an individual reduces his or her cognitive options by becoming more convergently biased in thinking (Alpaugh, Renner & Berren, 1975; Renner, Alpaugh & Birren, 1978). These changes both in the individual and his or her environment imply that the number of coping resources or options that an older person can perceive during stressful situations are reduced, compared with those of a younger person.

The type of coping efforts used may also vary with age. Cohen's (1980) research on breast cancer patients suggested that in situations when little control over the situation is possible, pallative efforts, especially avoidance strategies may be effective. These findings have obvious relevance in studying coping efforts of elderly people whose diminished energy levels and constricted environments limit their degree of control over stressful situations. Verwoerdt (1972) contended that usual ways of coping, especially high energy problem-solving skills, are replaced by new techniques that conserve energy. Active or aggressive mastery may be replaced by acceptance and the capacity to resign oneself to the inevitable without self-reproach, bitterness or cynicism (Zetzel, 1965). This change to a more passive, accommodating style has been documented in Guttman's (1977) TAT protocols of individuals as they moved from midlife to late life. Similar coping strategies of the elderly have been observed in institutional

settings (Cutler & Chiriboga, 1976) and those who employed more passive than active strategies also experienced a greater sense of well-being (Felton & Kahana, 1974). However, Kahana and Neale, (1980) found no differences in the amount of problem-solving and pallative coping efforts among 460 residents relocated from a retirement community. More research on coping behaviors of the elderly is needed before any definitive conclusions can be drawn.

Family Systems and Appraisal Processes

The issue of timing and sequencing of events over a life span extends beyond a single individual. It is not just the pattern of events within a single life span that is important, but how these events interact with events in the life-cycle of significant others. For the spouse whose husband is out of work for several months following his heart attack, having to assume additional role responsibilities around the home or seeking outside employment to meet financial demands may interfere with child rearing. Likewise, a male spouse who takes time off from his job to care for his wife during her recovery may jeopardize his chances for career advancement. For many heart attack patients, disruption of family life is the most significant aspect of the illness and recovery period.

A family is a dynamic, open system comprised of individual members interacting with one another in order to facilitate adaptation and growth throughout the life-cycle. Interrelatedness among members provides unity in the system while interdependency among individual members is crucial for family survival. As a

dynamic system, the interactions of one member always affects the behavior and interaction of other members. Effective family functioning mobilizes family coping resources during times of stress to maintain a state of equilibrium, while ineffective family functioning depletes resources and results in disintegration of the system (von Bertalanffy, 1968).

For the family system, a heart attack causes monumental disruption and disorganization which may persist months into the recovery. Anxiety and fear regarding the possible death of a family member, leaving others alone in the world, threatens the family's survival. Members who view the illness as punishment may interact with one another with anger, resentment or guilt. A heart attack, however, poses the greatest threat to family functioning in that role responsibilities set aside by the patient must be assumed by other family members. Those who acquire unfamiliar care taking roles when the patient returns home may react with overprotectiveness towards the patient while neglecting their own needs as well as those of other family members. Others may feel resentment and reinforce non-compliant behavior in the patient. Clearly, the appraisal of how stressful a heart attack is depends on how its occurrence affects the family system; what changes take place to cope with its occurrence and how family members influence the development, maintenance, deterioration or improvement of the patient's condition.

While a heart attack is commonly appraised as threatening, patients and families may view it not as a threat, but rather as

a series of challenges or tasks to be mastered. Based on the work of Moos (1977) and Hamburg and his colleagues (1974) the adaptive tasks facing the MI patient and his or her family include: 1) dealing with the symptoms of the illness; 2) dealing with treatment of the illness and lifestyle changes; 3) maintaining relationships between medical and nursing staffs; 4) managing upsetting feelings associated with the illness; 5) preserving self-image and maintaining self-control and mastery; 6) preserving relationships among family members and friends; 7) preparing for uncertain future and managing losses; and 8) maintaining role responsibility. How well the patient and family mamage these tasks depends on the seriousness of the illness, the developmental tasks facing family members and how effective the family functions as a system, utilizing available resources and options. Olsen and his colleagues (1970) list several characteristics of families that cope effectively with a serious illness. These include: clear separation of generations; flexibility within and between roles; direct and consistent communication; and tolerance for individualization.

In summary, the theoretical framework for this study emphasized that psychological stress arises out of a troubled person-environmental relationship where demands tax or exceed available resources both internal and external as appraised by the individual involved. It is the person's subjective appraisal of the situation as a threat, challenge or irrelevance that is the psychological key in understanding the coping responses and emotional reactions that occur. Coping efforts consist of both problem-focused and emotion-

controlling cognitions which master, tolerate, reduce or maximize internal and environmental demands. The timing and sequencing of an event in the life-cycle, the developmental period of the individual, the family system and availability of individual and environmental resources shape appraisal processes. Resolution of the stressful event occurs when the troubled person-environmental relationship returns to a dynamic state of equilibrium.

Research Questions

Based on the review of literature and the theoretical framework, this study addressed the following questions.

1. What are the perceived sources of stress of MI patients and their spouses?
2. What coping behaviors do patients and spouses use during the recovery period to deal with the various adaptive tasks imposed by the illness?
3. Does the severity and type of perceived stress vary according to age?
4. Does the amount, type and perceived effectiveness of coping responses vary according to age?
5. What are the relationships among stress and coping and depression in patients and spouses during the recovery period? Are there any age differences?
6. What are the relationships among background variables in the study, e.g., demographic data, number of chronic illnesses, severity of MI, risk factors or readmissions,

which might influence the degree of stress experienced in the recovery period?

Conceptual Definition of Terms

Stress

Stress refers to demands that arise out of a troubled person-environmental relationship following a heart attack which continuously tax or exceed adaptive resources internally and externally appraised by the individual. Implicit in this definition is that the emotional distress that arises from the troubled relationship can be inferred by psychological, self-report and behavioral measurements.

Coping Responses

Coping responses are problem-focused and emotion-controlling responses to potentially stressful events associated with recovery from a heart attack. These responses serve to prevent, control, or avoid emotional distress. An underlying assumption is that when faced with a potentially harmful event, something must be done to satisfy the demands of the situation or a dysfunctional emotional reaction occurs. Problem-focused coping refers to responses designed to eliminate or modify the stress producing situation (Mechanic, 1962). Such tactics include information and help-seeking, compliance, risk-taking, bargaining as well as cognitive attempts at problem solving such as planning and analyzing situations. Emotion-controlling coping responses are aimed at dealing with the emotions induced by the stress. Some

emotion-controlling responses include denial, minimization, avoidance, acceptance, self-blame, wishful thinking and behaviors such as drinking, sleeping, and letting feelings out. It is hypothesized that most stressful situations elicit both types of coping responses (Folkman & Lazarus, 1980).

Emotional Responses

Emotional responses refers to ratings of depression and overall emotional distress of patients and spouses during the recovery period. Depression is the unpleasant affective emotional response to losses associated with a heart attack. Overall emotional distress is the degree of tension or distress experienced by heart attack patients in response to the demands of the illness.

CHAPTER II

METHODOLOGY

Design

In order to address the research questions, a descriptive correlational design was utilized in this study. The descriptive analysis was retrospective in that perceived sources of stress and coping responses of patients and spouses were assessed by a card sort technique six months following the patients' infarctions. To consider factors which may be related to the degree of perceived stress, the correlational analysis investigated the relationship between perceived stress and select antecedent and intervening variables; e.g., demographic characteristics, illness-related variables, depression, perceived effectiveness, and type of coping.

The data presented in this thesis are part of an ongoing project, Preparatory-Supportive Care for MI Patients and Family (Wolfer, 1979), supported by a research grant from the Division of Nursing. The project is part of a line of clinical investigations designed to test a theoretical nursing model of systematic psychological preparation and supportive care. Patients admitted to two private hospitals in Salt Lake City were considered for the project. Patients and spouses who consented were interviewed

by research nurses at the following time intervals: while the patient was in CCU, at discharge, six weeks, three months, and six months post-discharge. Data were collected over a two year period regarding the following categories of variables: stress trajectories, coping responses, psychosocial adjustment, patient and spouse evaluations of care, compliance with medical regimes, and physical recovery. The antecedent and intervening variables collected as part of the large research project were used in this study.

The project was approved by the University of Utah Human Subject's Committee and internal review boards at both hospitals.

Subjects

All patients admitted to the CCUs with a diagnosis of acute myocardial infarction documented by clinical history, ECG, and enzyme changes and met the following sampling criteria were included in the project: a) English speaking and able to communicate verbally; b) free from organic brain syndrome; c) free from serious psychiatric disturbances; d) free from severe heart failure and/or cardiogenic shock; e) admitted for their first or second MI with no previous heart surgery; f) living and returning to a non-institutional setting; g) living within a radius of 50 miles of Salt Lake City; and h) gave formal consent (See Appendix A). Living with a spouse was not a criterion for inclusion into the study. However, all subjects were required to have a significant other living in Salt Lake City and interact with them on a regular basis.

Patients admitted to the hospitals with a diagnosis of an acute MI between February and May of 1981 participated in the stress and coping card sorts.

Setting

Two private hospitals in the city were the clinical settings for the hospital interviews. Hospital A is a 570 bed facility with a full complement of medical and surgical services. The cardiac intensive care unit has 12 beds with full ECG monitoring and cardiac resuscitation equipment with relay screens and printoff equipment in the nurses' station. The unit is staffed with 28 full and part-time RNs and LPNs. During the acute phase of the illness until two days post-admission, the patient-nurse ratio is 2:1. Thereafter nurses usually care for three to four patients. The average stay on the unit is five days. Patients are then transferred to a general medical care unit which offers a cardiac rehabilitation program. Patients and spouses meet in a group setting, one hour a day for five sessions. Information regarding heart disease, risk factors, and rehabilitation are presented. Patients also have the option of participating in an exercise fitness program on an outpatient basis after discharge. The average length of stay in the hospital is 11 days.

Hospital B is a 323 bed private hospital located in the same central city area as Hospital A. A 25 bed intensive care wing is divided into medical and surgical intensive care units. The 13 bed medical care unit where MI patients are admitted, is located in one end of the wing. The equipment and physical layout is

similar to Hospital A, however, the unit is more spacious and has aesthetic modern decor. The entire intensive care wing is staffed with 52 part and full-time RNs and LPNs. All nurses periodically rotate through both units. In the CCU the nurse patient ratio is 1:1 for patients in the computer monitor beds and 2:1 for those in step-down beds. The average length of stay is four to five days and then patients are transferred to an "intermediate care unit" which specializes in cardiac rehabilitation. Patients are assigned to a primary nurse who is responsible for teaching the patient about his or her rehabilitation. The average length of stay in the hospital is ten days.

Both hospitals draw on patients from the Salt Lake City area of about 750,000 people and from surrounding small towns and rural areas. The majority of patients in both facilities are from the middle and upper-middle class sectors of society. Hospital A tends to have somewhat higher proportion of white collar and managerial-professional patients while Hospital B tends to have a somewhat higher proportion of working class or blue collar patients. Both hospitals have patients from all major religious faiths in the area although there are a higher percentage of Latter Day Saints patients at Hospital A (approximately 65%) and about equal numbers of Catholics and non-Catholics at Hospital B.

The setting for the post-discharge interviews and card sort consisted of patients' homes. Unlike the hospital interviews, patients and spouses were interviewed together.

Variables

Study variables were classified into four groups: demographic, illness related, emotional states, and perceived stress and coping variables.

Demographic Data

Information regarding subjects' age, sex, marital status, religion, occupational status, education, income, family size, and frequency of contact with family members was collected by nurse interviewers during the hospital interviews at the convenience of the subjects.

Illness Related Variables

This group of variables included the number of chronic illnesses of patients and spouses, severity of MI, and risk index scores, and the number of readmissions by the patient during the six month recovery period. Patients' charts, in addition to information obtained from interviews, were used to collect data on the illness-related variables. Severity of MI was measured by a tool developed by the investigator. The severity of MI score was determined by assigning different weights to the length of hospital stay, peak CPK elevation, the degree of congestive heart failure present at the time of transfer from CCU to the floor (Killip scale), the number and type of complications during recovery, and the number of cardiac readmissions to the hospital (See Appendix B) the possible range of scores was 0.5 to 57.0. A risk index profile developed by Nora, Lortscher and Spangler,

(1980) was used to measure the degree of risk (See Appendix C). Risk scores could range from 0.5 to 10.0. Serum triglyceride levels were not routinely taken on all patients and therefore were excluded from the risk score. Another minor modification in the tool was made to enhance its validity. Patient scores on the Jenkins Activity Survey (Jenkins, Rosenman & Zyzanski, 1972) for a Type A behavior were substituted for the interviewer's clinical assessment of Type A personality used by Nora and associates.

Emotional States

Nurse-interviewer ratings for depression in patients and spouses were made at the various interview times. Subjects were assessed for the presence and absence of the following symptoms: a) self-report depressed mood; b) interviewer's assessment of depressed mood, affect and appearance; c) sleep disturbances; d) changes in appetite; e) lack of energy, motivation or decisive activity; f) hopelessness about the future; g) self-worthlessness, guilt, withdrawal from social and interpersonal activities; and h) reoccurring thoughts of death. Based on the intensity and frequency of the above symptoms nurses rated subjects on a five point Likert-type scale that ranged from the presence of transient or very minor to clinical depression. To meet the criteria established by the American Psychiatric Association (DSM III) for depressive disorders, in addition to a depressed mood, clinically depressed subjects had four or more of the above symptoms. During each interview subjects were also rated according to the degree of

tension or distress present. A five point Likert-type scale was used in the assessment and ranged from "none or very little distress" to "extreme distress." Interrater reliability for the depression and emotional distress ratings were .91 and .87 respectively.

Stress and Coping

Stress and coping were measured by a card sorting technique administered to subjects at six months following an unstructured interview. For the Stress Card Sort (SCS) patients and spouses were instructed to sort a set of cards, each containing one stressful event, into four piles. The piles were labeled "does not apply," "somewhat stressful," "moderately stressful," and "very stressful." Scores were then assigned to cards according into which pile they were sorted. The scoring ranged from zero for cards placed in the "does not apply" pile, to three for those in the "very stressful" pile. For the Coping Card Sort (CCS) subjects were instructed to sort the set of cards containing coping responses also into four piles labeled "does not apply," "applies but was not helpful," "applies and was somewhat helpful," and "applies and was very helpful." Scores ranging from zero to three, were assigned to cards sorted into the various piles according to the degree of perceived effectiveness of the coping response. The second category, "applies but was not helpful," was designed to elicit socially undesirable responses. In addition to measuring perceived coping effectiveness, the CCS measures type of coping responses; e.g., problem-focused and emotion-

controlling coping.

Development of the Stress and Coping Card Sorts

The ideal method of assessing stress and coping would be to follow a subject throughout the recovery period eliciting what he or she perceives as being stressful, what they did to cope with the stress and their perception of the effectiveness of such actions. Yet clinical experience suggests that heart attack patients do not talk freely about what is bothering them while they are experiencing the stress. Often they deny or minimize threats in an effort to gain control over the situation. Consequently, inferences must be made about behaviors which often are the only indication that the person is experiencing stress. Regarding the assessment of coping, Lazarus and Cohen (1979) have pointed out that it is somewhat unrealistic to expect people to know what is meant by coping or to tell us while they are under stress; for example, whether they are avoiding or denying unpleasantness. Consequently observing coping behaviors also necessitate inferences be made from observed behavior.

In developing the card sorts, the literature on stress and coping during the recovery from a heart attack was reviewed as well as twenty charts of patients and spouses followed for six months in the large research project. Following an exhaustive review, 64 potential stresses and 84 coping responses emerged for patients and 55 stresses and 71 coping responses for spouses. The different stresses were typed on 5 x 7 colored cards. Each

card contained one stress item. For the CCS, coping responses were grouped according to nine adaptive tasks imposed by the illness. The adaptive tasks included: 1) dealing with the symptoms of the illness; 2) dealing with the stress of treatment and procedures; 3) dealing with life style changes; 4) maintaining relationships with health care professionals; 5) managing upsetting feelings; 6) preparing for an uncertain future and managing losses; 7) maintaining relationships with family and friends; 8) preserving self-courage and maintaining a sense of control; 9) and maintaining role responsibilities. A statement identifying the adaptive task and a coping response was typed on 5 x 7 colored cards.

To reduce interviewer bias in drawing inferences from observed behavior and to minimize "selective amnesia" of subjects, the card sort method of assessment was administered by a research nurse who had an opportunity to develop a trusting, supportive relationship while following the family throughout the recovery period. This method is a more indirect way of assessing stress and coping than self-report but minimizes inferences since subjects are instructed to sort the cards independent of the nurse and other family members present. It also eliminates the need for subjects to assign abstract numbers to stresses and coping responses. Instead subjects physically place the cards into piles which forces them to rank stresses according to levels of perceived stress and coping according to levels of perceived effectiveness. Lazarus et al. (1979) have pointed out that the assessment of coping will always have to face the issue of self-

report versus observational and inferential techniques and both methods should be used to ensure accurate measurement. The larger research project from which the present findings come also contains information about coping behaviors observed during the interview. At some point in the future it should be possible to compare self-report with clinical observations.

Validity

When items in a tool are both comprehensive and representative of the content being sampled, content validity is achieved (Nunally, 1978). The procedure of critically and extensively reviewing the literature and an indepth analysis of interviews designed to elicit subjects' perceptions of stress and coping responses lends support for the content validity of the card sorts. Another procedure was also used to establish concurrent validity for the stress card sorts. In comparing patient and spouse overall stress scores with mean emotional distress ratings obtained from interviews, Pearson product-moment correlation coefficients of .52 for patients and .63 for spouses were obtained (r^2 = .27 and .40). Both were significant at $p \leq .001$.

Reliability

According to Nunally (1978), coefficient alpha should be obtained before other types of reliability estimates because the major source of measurement error is likely to be content sampling and internal consistency measures. Alpha considers the sampling of situational factors associated with the administration

of items. Using Cronbach's alpha, internal consistency reliability coefficients for stresses in the patient SCS grouped according to the eight adaptive tasks yielded moderately high coefficients. Reliability coefficients ranged from .55 to .78. The spouse SCS also yielded moderately high reliability coefficients ranging from .67 to .88 (See Appendix D).

Based on theoretical formulations by Lazarus and Launier (1979), coping responses contained in the patient and spouse CCSs were classified as either problem-focused or emotion controlled responses. Internal consistency for the classification of items was evaluated by having three colleagues, knowledgeable of the different functions of coping, classify the responses accordingly. Some responses can be viewed as having both components but were classified according to which primary mode existed. Results of this classification yielded 36 problem-focused and 49 emotion-controlling ways of coping for the patient, and 30 problem-focused and 41 emotion-controlling ways of coping for the spouse. Overall agreement of classifying the items was 93% for the patient CCS and 90.2% for the spouse CCS.

Method of Data Analyses

To address the first two research questions, descriptive statistics were employed to determine the various stresses and coping responses used by patients and spouses. Measures of central tendency, e.g., means, and standard deviations were computed for all items contained in the stress and coping card sorts. Items in the SCSs were ranked according to mean scores. For the

Coping Card Sorts items within each adaptive task were ranked according to mean scores. The total number of stresses, an overall stress and coping effectiveness score, the number and effectiveness of problem-focused coping, and number and effectiveness of emotion-controlling coping were calculated from the data generated from the card sorts.

To examine age related trends in the descriptive data, subjects were divided into three convenient age groups: younger patients less than 50 years old, middle aged patients 50 to 64 years, and older patients 65 years and older. While Dovenmuehle and Verwoerdt (1962), Rosen and Bribring (1966) and Goodman (1972) considered older patients to be 60 years or older, the age groups used in this study were thought to better represent social changes that have occurred over the past twenty years which influence age norms.

Correlation and regression analyses were used to answer research questions five and six. To consider factors which might influence perceived stress of patients and spouses, study variables were classified into the following four groups: demographic, illness related, emotional states, and type and perceived effectiveness of coping responses. Zero-ordered correlation coefficients were obtained on all pairs of variables. The research questions were non-directional and therefore a $p \leq .05$ was required using a two-tailed test of significance. Results from the correlation matrixes indicated that several variables which correlated significantly with perceived stress scores were also intercorrelated with other study variables. Therefore, multiple

regression analyses using step-wise procedures were used to determine the contribution of each study variable to the variance of perceived stress. The step-wise procedures selected the set of variables which best predicted perceived stress while eliminating those that were superfluous. It is important to note however, that the purpose of the study was not to be able to predict stress, but rather to examine relationships between perceived stress and a select group of study variables in an effort to formulate hypotheses to guide future research once an objective stress tool has been developed.

In the regression equations, patient and spouse variables were entered separately. For example, for the dependent variable patient stress, one regression analysis included all patient variables while a second examined the contribution that spouse variables made to the variance of patient stress. The optimal predictor set was defined as that combination of variables which predicted perceived stress with the minimum standard error of estimate. Categorical variables were entered into the correlation and regression analyses as dichotomous dummy variables. By arbitrarily assigning metric values of zero and one to each category of a given variable, dummy variables allow data to be treated as interval data and entered into the regression equation. According to Nie, Hull and Jenkins (1975, p.375) multiple correlation from dummy regression is equivalent to the conventional eta (correlation ratio) and can be interpreted as a measure of the strength of association between Y and the categorical variable.

Recordings for all variables used in the correlational and regression analyses are listed in Table 1.

Table 1

Recordings for Study Variables Used in Correlation and Regression Analysis Procedures

Category	Original Variables	Recorded Variables for Analysis
Demographic	V_1 = Age	Age = V_1
	V_2 = Sex	Sex = (0 = female; 1 = male)
	V_3 = Occupational status	O.S. = (0 = employed full or part-time; 1 = retired or housewife)
	V_4 = Education	Ed. = V_4
	V_5 = Income	Inc. = V_5
	V_6 = Number of chronic illnesses	Ch. Ill. = V_6
Illness	V_7 = Severity of M.I.	Sev. M.I. = V_7
	V_8 = Risk factor index	Risk = V_8
	V_9 = Number of cardiac related readmissions	Readm = V_9

Table 1 Continued

Category	Original Variables	Recorded Variables for Analysis
Emotional status	V_{10} = mean interview depression score pt. = $H_1 + H_2 + HV + HV_2 + HV_3/5)$ sp. = $H_1 + HV + HV_2 + HV_3/4$	$\overline{X}$ Depr. = V_{10}
	V_{11} = mean interview emotional distress score pt. = $H_1 + H_2 + HV_1 + HV_2 + HV_3/5$ sp. = $H_1 + HV_1 + HV_2 + HV_3/4$	$\overline{X}$ Emodes = V_{11}
Coping	V_{12} = Number of problem focused coping	# Prob. F.C. = V_{12}

Table 1 Continued

Category	Original Variables	Recorded Variables for Analysis
Coping continued	V_{13} = Perceived effectiveness of problem focused coping	Eff. Prob. FC = V_{13}
	V_{14} = Number of emotion controlling coping	# Emo. C.C. = V_{14}
	V_{15} = Perceived effectiveness of emotion controlling coping	Eff. Emo. C.C. = V_{15}

CHAPTER III

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Sample Characteristics

A total of 40 patients and 31 spouses were included in the study. Characteristics of the sample are given in Tables 2 and 3. Patients averaged 57.4 years of age compared with 54.7 for spouses. Nineteen patients (47%) and 12 spouses (39%) were 60 years or older making comparisons with previous work difficult since subjects over 60 have been excluded from the majority of investigations.

The sample was overrepresented in terms of race (97% Caucasion) and religion (94% LDS). Twenty-eight patients (70%) were male compared with only seven (23%) male spouses. Income distribution was skewed with 21 households (52%) having incomes in excess of $20,000 and only nine households (23%), the majority consisting of older persons, earning less than $15,000 annually. The skewed income distribution was unexpected considering that 14 patients (37%) were retired and one-fourth of the female patients who were housewives did not have a working spouse. However, further analysis of the data indicated that of those

Table 2

Distribution by Number and Percent for Selected Demographic Characteristics of Patients and Spouses

Variables	Patients (N=40)		Spouses (N=31)	
	N	%	N	%
Age				
30's	2	5%	3	9%
40's	10	25%	10	29%
50's	9	23%	8	23%
60's	16	40%	13	37%
70's	2	5%	1	3%
80's	1	2%		
Sex				
Male	28	70%	8	23%
Female	12	30%	27	77%
Occupation				
White collar	21	53%	13	37%
Blue collar	14	34%	8	29%
Housewife	5	13%	12	34%
Working full or part-time	21	52%	13	49%
Retired	14	35%	6	11%
Education				
Did not graduate from high school	8	20%	3	9%
Graduated from high school	12	30%	16	46%
Attended college	13	33%	12	34%

Table 2 Continued

Variables	Patients (N=40)		Spouses (N=31)	
	N	%	N	%
Education cont.				
Professional and/or graduate school	7	17%	4	11%
Income				
< $8,000	3	7%		
$10,000-14,999	6	15%		
$15,000-19,999	10	25%		
$20,000-29,990	14	35%		
$30,000 +	7	17%		

Table 3

Means, Standard Deviations and Ranges for Select Characteristics of Patients and Spouses

Variable	Patients (N=40)[a]			Spouses (N=32)[a]		
	$\bar{X}$	S.D.	Range	$\bar{X}$	S.D.	Range
Age	57.40	11.70	(34-82)	54.71	11.10	(31-70)
Severity of M.I.	5.98	3.79	(.5-14)			
Risk Factor Index	3.76	1.98	(1.0-8.5)			
$\bar{X}$ Overall Depression	1.28	.83 (N=36)	(0-5)	1.11	1.00 (N=24)	(0-5)
Overall Stress	53.00	26.50	(6-128)	48.87	20.75	(19-106)
No. of Stresses	33.70	17.65	(4-64)	31.50	9.47	(17-50)
No. of Prob. F.C.	21.58	6.56	(10-45)	17.30	6.20	(6-30)
Eff. Prob. F.C.	48.15	14.08	(19-74)	40.32	15.64	(12-69)
No. Emo. C.C.	27.35	9.36	(7-45)	22.70	7.10	(9-34)
Eff. Emo. C.C.	56.38	20.82	(7-91)	49.26	18.28	(14-89)

[a]N value reported overall with the exception of Mean Overall Depression

retired from their lifelong occupations, four (28%) were working part-time doing odd jobs and six persons (43%) had sizable pensions. The skewed income distribution also reflects the sizable number of households (40%) having two members working full or part-time.

At the time of admission to the hospital, 36 patients (90%) were married, two widowed and two divorced. Family size ranged from two to nine people with a mean of 5.5 (SD ± 1.8). Half of the households had one or more children living at home and 16 couples (40%) lived alone. The majority of patients (73%) had at least weekly contact with family members living outside of the home and only four (10%) seldom saw relatives or had contact only on special occasions such as holidays.

Both patients and spouses were relatively healthy prior to the onset of the patient's illness. Patients averaged one chronic illness compared to .50 illnesses for spouses. Only four patients (10%) and two spouses (6%) had more than two chronic illnesses. Nearly half of the patients (45%) had histories of cardiovascular disease, e.g., high blood pressure, mitral valve, and atherosclerotic heart diseases. Diabetes, arthritis, depression, asthma, and colitis were other chronic illnesses reported by patients. Six spouses (20%) had high blood pressure and two had cancer, one spouse died during the six month follow-up period and the other died 15 months after the patient's MI. Organic heart disease and bronchitis were also reported by two spouses.

Illness Characteristics

This was the first MI for the majority (97%) of patients. Thirty-seven were admitted to Hospital A and the remaining three to Hospital B. Patient risk factor scores averaged 3.77 (SD ± 1.98). Scores ranged from 1.0 to the maximum score of 8.5. However, the distribution was skewed with only 11 patients (28%) having scores of 5.0 or greater. The mean severity of MI scores was 5.98 (SD ± 3.79) and ranged from .5 to 14. Severity of MI scores were also skewed with over half of the patients having scores of 5.0 or less. During the six month follow-up period, four patients had bypass surgery and seven were readmitted for unstable angina and/or elective angiography. Thus, overall the majority of patients were at low risk, had physiologically uncomplicated MIs and uneventful recovery periods.

Analysis of Patient Stresses

The patient stress card sort was able to distinguish persons experiencing varying degrees of stress as evidenced by the wide range of overall stress scores. Patients averaged 33.7 stresses with a mean stress score of 53 (SD ± 26.5). Scores were normally distributed and ranged from six to 128 with a possible maximum score of 192.

Rank ordering of mean scores for all stress items contained in the card sort are listed in Table 4. According to the table, "not having the same nurse care for me for more than one day at a time" (64) was ranked least stressful and "not having enough energy" (1) was most stressful. Since stress scores could range

Table 4

Assigned Rank Order, Means and Standard Deviations for 64 Stress Items Related to the Recovery Period as Ranked by 40 Patients

Sample(N=40)				Sample (N=40)			
Assigned Rank	Item	Mean	S.D.	Assigned Rank	Item	Mean	S.D.
1	Not having enough energy after my heart attack and wondered whether or not I would ever feel strong and healthy again.	1.58	1.04	14	Changing my life-style after my heart attack.	1.15	.80
2	Concern about what I should do if I were to have more pain.	1.48	.93	14	I kept wondering, worrying about how this heart attack of mine was affecting my family.	1.15	.92
3	Having other people do things I normally do for myself.	1.45	1.06	14	I wondered what my future would be like.	1.15	.86
4	Not knowing exactly what I could or could not do safely throughout my recovery.	1.38	.84	20	Having my spouse or family member assume my usual responsibilities around the house.	1.10	.98
5	The possibility of having another heart attack in the future.	1.35	.89	21	Not being able to do the things I formerly did.	1.05	.78
6	Concern that I might have severe physical limitations after the heart attack.	1.33	.89	21	Having another health problem or complications arise while recovering.	1.05	1.13
7	Not being able to care for myself and fear of being a burden to others.	1.30	1.09	23	Being sick in the hospital concerned me because I'm always so healthy.	1.03	.95
7	I worried how "down" or depressed I felt at times, and wondered if I'd ever feel full of energy again.	1.30	1.02	23	Seeing things left undone while I recovered from my illness.	1.03	.97
7	I felt tense or anxious at times and I didn't know just what to do about it.	1.30	1.02	25	I was worried I might have to give up activities that were meaningful and important to me.	1.00	.96
10	The possibility of additional medical tests, procedures and/or heart surgery.	1.28	1.06	25	The possibility of having to go back into the hospital again.	1.00	1.04
11	I often wondered why this happened to me now.	1.25	.95	27	Thoughts about possibly dying either at the time of my heart attack or later.	.95	1.04
12	Being kept down in bed or restricted from usual activities.	1.20	.99	28	Not being able to sleep at night or waking up in the middle of the night and not being able to go back to sleep.	.90	.87
13	Ongoing problems that worried me before my heart attack continued to worry me during my recovery.	1.18	.90	28	Not knowing what it would be like when I first returned home from the hospital.	.90	.67
14	Pain or discomfort I experienced at the time of my heart attack.	1.15	1.08	28	I felt disappointed I would not participate in activities that were planned before my heart attack.	.90	1.03
14	Thoughts about what I should have done differently in the past.	1.15	1.15	28	Thoughts about what I should have done differently in the past.	.90	.74
14	Concern about what every little symptom meant and whether or not it was related to my heart.	1.15	.92				

Table 4 Continued

Sample (N = 40)				Sample (N=40)			
Assigned Rank	Item	Mean	S.D.	Assigned Rank	Item	Mean	S.D.
32	Worry about my spouse being home alone.	.88	1.04	47	Being in the unfamiliar environment of the hospital.	.50	.72
33	I wondered if I became lazy while I was recovering from my illness would I return to my normal self again.	.80	.85	49	Not being able to get in touch with my doctor when I needed to.	.48	.78
34	Thinking about losing income because of my illness.	.78	.86	49	I felt upset or irritated by the way my spouse and/or family members responded to me after my heart attack (nagged me too much or acted like they didn't care).	.48	.85
34	I worried about future medical expenses.	.78	.95				
36	Not knowing the results or reasons for treatment(s).	.75	.95	51	Not being able to obtain pain relief from medication.	.43	.78
36	I kept wondering when I would be able to go back to work and in what capacity (i.e., would my job change because I'd had a heart attack?)	.75	1.01	52	Having strange machines and monitoring equipment around me in the hospital.	.40	.81
38	Long-standing problems involving family members or friends.	.73	.91	52	Not knowing when to expect things to be done to me in the hospital.	.40	.71
39	The changes in the type and quantity of food I ate after my heart attack.	.70	.88	52	Concern about the quality of care I received from hospital personnel, i.e., either doctors, nurses, lab personnel, dietician, physical therapist, etc.	.40	.67
40	My sexual relationship with my spouse was less satisfying following my heart attack.	.65	1.03	52	Not being able to return to my former job.	.40	.78
41	Cost of my medical treatment following my heart attack.	.63	.95	56	Returning to work and having co-workers treat me differently.	.38	.74
42	My lack of privacy in the hospital or high noise level.	.60	.93	57	Being cared for by an unfamiliar doctor(s).	.35	.74
42	Taking medications that caused me discomfort.	.60	.93	57	I felt doctors and/or nurses were reluctant to answer questions I had regarding my illness.	.35	.77
44	What other people think of me since my heart attack.	.58	.84	57	Changes in relationships with friends, neighbors, or business associates.	.35	.66
45	Having doctors and/or nurses talk too fast or use words I couldn't understand.	.53	.82	57	I would have liked to have shared my feelings with someone else but the fact that I never had a good opportunity to do so was disappointing.	.35	.71
45	Changing future plans.	.53	.78				
47	Frequently being awakened or disturbed by hospital personnel.	.50	.88				

Table 4 Continued

Sample(N=40)			
Assigned Rank	Item	Mean	S.D.
61	Having different doctors tell me conflicting reports.	.33	.69
62	Not having friends visit me or keep in touch with me.	.30	.52
63	I felt reluctant to ask doctors/nurses questions regarding my illness treatment and/or progress.	.25	.54
64	Not having the same nurse care for me for more than one day.	.13	.40

from zero to three, "not having enough energy" with a mean score of 1.58 was perceived to be moderately stressful for the majority of patients. Yet its large standard deviation (SD ± 1.04) suggests the item was very stressful for some patients and only somewhat stressful or not stressful at all for others.

Several highly ranked items deal with the prevailing sense of uncertainty patients have regarding their condition and the loss of control or predictability over the immediate future. These items include "not having enough energy and wondering if I will ever feel strong again" (1), "what should I do if I were to have more pain" (2), "fear of another attack in the future" (5), "not knowing what I could or could not do safely during my recovery" (4), "worry about every little ache or pain, whether or not it was related to my heart" (14), and the possibility of additional medical tests, procedures or heart surgery in the future" (10). Not surprising, the anticipated fear of "having more pain in the future" (2) was perceived to be more stressful than the actual "pain or discomfort I experienced at the time of my heart attack" (14).

Other items ranked relatively high stem from dependency issues confronting patients during the recovery period. These include: "having other people do what I normally do for myself" (3), "fear of being a burden to others and not being able to care for myself" (7), "being kept down in bed or restricted from usual activities" (12), and having others assume additional responsibilities around the house" (20). Also threats to one's

emotional equilibrium, that is, feelings of anxiety and depression were ranked high by patients. In fact, three-fourths of the patients (30) experienced unpleasant feelings associated with both emotional states.

Regarding lifestyle changes, only the general item "having to change my lifestyle after my heart attack" (11) and "not being able to do the things I formerly did" (21) were ranked moderately high. Items related to other changes such as, "having to change the type and quantity of food I ate" (39), "would I be able to go back to work and in what capacity" (36), and "changes in relationships with friends, neighbors, or business associates" (57), were all ranked in the bottom half of the list with less than half of the patients perceiving them to be stressful. Patients also experienced little distress as a result of changes in relationships with family members. While three-fourths of the patients worried about "how their illness was affecting family members" (14), the majority were not upset with the way "spouse or family members responded to them, e.g., overprotective or showing lack of concern" (49) nor experienced "dissatisfaction with sexual relationships" (40) following their attack. In sum, most patients were moderately stressed by having to make some change in their lives as a result of their illness - namely changes in the types of activities in which they could engage. However, they experienced little distress in having to make changes in dietary habits, work situations, and social relationships.

Items ranked low in stress included day-to-day inconveniences of the hospital situation, e.g., strange equipment, frequent interruptions, lack of privacy, and noise. Difficulties with health care providers, concerns about the quality of care received, feelings of isolation from support networks, and financial worries were also ranked low in stress with less than one-third of the patients experiencing difficulties in these areas. All items in the card sort, however, were perceived stressful by at least 10% (4) of the patients.

Regarding potential age differences in the data, no significant relationship was found between overall stress scores and the age of the patient. However, the moderately strong, negative correlation ($r = -.22$) suggested that with advancing age patients did tend to experience less distress. Perhaps with a larger sample a significant relationship might emerge.

Age group comparisons of ranked mean scores for the individual items contained in the card sort indicate that the types of stresses confronting heart attack patients also vary with age. As shown in Table 5, patients over 65 years of age were distressed most by dependency issues confronting them during their recovery. "Having other people do things I normally do for myself" (1), "not being able to care for myself" (3), and "seeing things left undone while I was recovering from my illness" were all rated as more stressful with increasing age. Also the items "worry about my spouse being home alone while I was hospitalized (14), "having another illness or complication arise

Table 5

Rank Order of the Most Stressful Items According to Select Age Groups of 40 Patients

< 50		50-65		65+	
Rank	Item	Rank	Item	Rank	Item
1.	Not having enough energy	1.	Not having enough energy	1.	Having other people do things that I normally do for myself
		1.	Concern about what I should do if I were to have more pain		
2.	Concern that I may have severe physical limitations	2.	Possibility of having another M.I.	2.	Not knowing exactly what I could do safely after my attack
2.	Possibility of additional medical tests, procedures and/or heart surgery	2.	Feeling tense or anxious		
2.	Thoughts about what I should have done differently in the past	2.	Wondered why this happened now		

Table 5 Continued

< 50 (N=14)		50-65 (N=13)		65+ (N=13)	
Rank	Item	Rank	Item	Rank	Item
3.	Wondered why this happened now.	3.	Concerned about what every little other pain meant	3.	Concern that I may have severe physical limitations
3.	Changing my life style			3.	Not being able to care for myself
4.	Not being able to care for myself	4.	Having other people do things I normally do for myself	4.	Possibility of having another M.I.
4.	Ongoing problems that worried me before my heart attack continued to worry me	4.	Worried how "down or depressed" I felt		
4.	Wondered what my future would be like	4.	Possibility of additional medical tests, procedures and/or heart surgery		
		4.	Pain I experienced at time of heart attack		
		4.	Not knowing exactly what I could do safely after my heart attack		

Table 5 Continued

< 50 (N=14)		50-65 (N=13)		65+ (N=13	
Rank	Item	Rank	Item	Rank	Item
5.	Concern about what I should do if I were to have more pain	5.	Thoughts about what I should have done differently in the past	5.	Not being able to sleep at night
5.	Not knowing exactly what I could do safely after my attack			5.	Disappointed that I could not participate in activities that were planned before my M.I.
5.	Possibility of having another heart attack in the future				
5.	Worried about how my M.I. was affecting my family				
6.	Pain I experienced at the time of my heart attack	6.	Having another health problem or complication arise	6.	Changing my life style
6.	Worried about how "down" or depressed I felt				
6.	Having other people do things I normally do for myself				

Table 5 Continued

< 50 (N=14)		50-65 (N=13)		65+ (N=13)	
Rank	Item	Rank	Item	Rank	Item
6.	Worried about how "down or depressed" I felt				

Note. Paired rankings distinguished by numerical rank reflect same mean stress scores

while recovering from the heart attack" (14), and "not being able to participate in activities that were planned before the attack" (8), were ranked higher with advancing age.

In comparison, middle age and younger patients were more distressed by the symptoms associated with the illness and the uncertainty surrounding their futures. "Not having enough energy," "pain experienced at the time of the attack," and "worry associated with every little ache or pain" were ranked very high by patients in both age groups. Also concern regarding the possibility of another heart attack," "additional medical tests, procedures, or heart surgery," and "what the future would be like" were all ranked high. Both middle aged and younger patients also ruminated about what they could have done differently in the past to perhaps prevent the attack and were distressed by thoughts as to why it happened at this point in their lives. Middle aged patients, in particular, were distressed by feelings of anxiety and depression while those younger were more concerned about having to make life-style changes, losing income, and how their illness was affecting family members.

Very few age differences were found in items ranked low in stress. Patients in all three age groups ranked items concerning relationships with health care providers very low. Middle aged and older patients also ranked items dealing with day-to-day inconveniences of the hospital setting low while those less than 50 years old were somewhat distressed by being in an unfamiliar environment. These younger patients also ranked "returning to

work and having co-workers treat me differently" higher than patients in the other two age groups.

Analysis of Patient Coping Responses

Results from the patient coping card sort clearly demonstrate that a wide repertoire of coping strategies are needed to deal with the variety of demands patients face during their recovery. Patients averaged 48.3 coping responses with a mean overall coping effectiveness score of 105.28 (SD ± 31.9). The coping effectiveness scores were normally distributed ranging from 26 to 158. Because of the disproportionate number of problem-focused as compared with emotion-controlling responses, the raw scores were converted to proportional scores to test for differences. The proportional mean number of problem-focused responses was higher ($\bar{x}$ = .61; SD = .20) than the mean number of emotion-controlling responses ($\bar{x}$ = .56; SD = .20) and the difference was statistically significant (t[40] = .05). Regarding possible age differences in coping, no significant relationship was found between the age of the patient and type of coping used (problem-focused r = -.08, emotion-controlling r = -.19). While the negative correlations may suggest that older people use less coping, the decline may also reflect the decrease in the number of stresses that older patients reported experiencing.

Tables 6 through 14 list the different coping responses used by patients when confronted with the adaptive tasks of the illness. Coping responses were ranked according to perceived

Table 6

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Patient Coping Responses Used to Deal with the Symptoms of the Illness

Assigned Rank	Coping Response	Sample (N = 40) Mean	S.D.	% of Use (N)	Age Group: < 50 (N=14) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=13) Assigned Rank	Mean	S.D.	% of Use (N)
	When I was not feeling well, I. . .															
1	Tried to tell myself that all that can be done was being done (E)[a]	1.85	1.21	80% (32)	2	1.64	1.22	78% (11)	1	1.92	1.19	85% (11)	1	2.00	1.29	77% (10)
2.	Tried to find out as much as I could about what ailed me by asking questions or reading (P)[b]	1.75	1.26	73% (29)	3	1.36	1.39	57% (8)	1	1.92	1.12	85% (11)	1	2.00	1.22	77% (10)
3.	Kept busy or tried to concentrate on more pleasant things in life (E)	1.70	1.14	78% (31)	1	1.93	.91	93% (13)	5	1.62	1.26	69% (9)	3	1.54	1.27	69% (9)
4.	Tried to tell myself it was not serious and go on about my business (E)	1.30	1.11	68% (27)	3	1.36	1.15	71% (10)	5	1.62	.96	85% (11)	7	.92	1.19	46% (6)
5.	Turned to my religious beliefs for comfort and reassurance (E)	1.28	1.22	58% (23)	10	.77	1.12	36% (5)	3	1.90	1.04	85% (11)	5	1.15	1.28	54% (7)
6.	Talked with my family and friends about how I was feeling. Let my feelings out (E)	1.18	1.11	60% (24)	9	.86	.95	59% (7)	4	1.85	1.07	85% (11)	8	.85	1.07	46% (6)
6.	Tried to keep problems to myself so as not to worry my family or friends (E)	1.18	1.15	60% (24)	5	1.20	1.11	54% (9)	8	1.00	1.08	46% (7)	4	1.31	1.32	62% (8)
8.	Found myself thinking about every little ache or pain and wondering if it was related to my heart (E)	1.00	.96	65% (26)	5	1.20	.89	86% (12)	7	1.08	.95	69% (9)	10	.69	1.03	38% (5)
9.	Took medications to make me better (P)	.95	1.20	45% (18)	7	1.00	1.18	50% (7)	11	.79	1.17	38% (5)	6	1.08	1.32	46% (6)
10.	Pretended there was nothing bothering me (E)	.90	1.13	48% (19)	8	.93	1.07	57% (8)	10	.92	1.19	46% (6)	8	.85	1.20	38% (5)
11.	Would visit or telephone a doctor for help (P)	.68	1.05	35% (14)	11	.64	1.01	36% (5)	8	1.00	1.29	46% (6)	11	.38	.79	23% (3)

Note. [a]E = emotion controlling; [b]P = problem focused

Table 7

Assigned Rank Order, Means, Standard Deviations, and Percent of Use of Patient Coping Responses to Deal with the Stress of Treatment and Procedures

Sample (N=40)					Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	When something unpleasant happened to me in the hospital or at home regarding the care or treatment I received, I. . . .															
1	Tried to reassure myself I was getting the best possible care (E)	2.08	1.20	80% (32)	1	2.29	1.14	86% (12)	1	2.15	1.14	85% (11)	1	1.77	1.36	69% (9)
2	Tried also to look at the good things that had happened and weighed the good and bad to gain a better perspective (E)	1.75	1.24	73% (29)	3	1.64	1.22	71% (10)	1	2.15	1.14	85% (11)	4	1.46	1.30	62% (8)
3	Tried to think about something else, take my mind off of what bothered me (E)	1.60	1.13	75% (30)	2	1.86	1.03	86% (12)	5	1.69	1.03	85% (11)	5	1.23	1.30	54% (7)
4	Compared myself to others in similar situations (E)	1.57	1.28	65% (26)	7	1.07	1.33	43% (6)	3	2.08	1.11	85% (11)	3	1.61	1.26	69% (9)
5	Tried to find out more about what was going on and why.	1.40	1.28	60% (24)	5	1.50	1.34	64% (9)	5	1.69	1.30	69% (9)	7	1.00	1.16	46% (6)
6	Tried to bring it to the attention of staff members who I felt could do something about it (P)	1.30	1.20	60% (24)	4	1.57	1.28	71% (10)	8	1.30	1.03	69% (9)	7	1.00	1.40	48% (5)
7	Tried not to bother others with my concerns (E)	1.28	1.24	58% (23)	7	1.07	1.26	50% (7)	9	1.00	1.08	54% (7)	1	1.77	1.30	69% (9)
7	Talked with family members, friends, or roomates about how I was feeling (P)	1.28	1.28	55% (22)	9	.93	1.07	50% (7)	4	1.77	1.36	69% (9)	6	1.15	1.35	46% (6)
9	Teased and joked to make it not seem so bad (E)	1.08	1.12	53% (21)	6	1.29	1.14	63% (9)	7	1.31	1.11	62% (8)	9	.62	1.04	31% (4)
10	Found myself sleeping more in an attempt to avoid the unpleasantness (E)	.60	.96	33% (13)	10	.71	1.07	36% (5)	10	.62	1.04	31% (4)	10	.46	.78	31% (4)
11	Got mad at the people or things that caused the problem(E)	.56	.93	33% (13)	11	.57	.94	36% (5)	11	.77	1.01	46% (6)	11	.31	.86	15% (2)

Note. E = emotion controlling, P = problem focused

Table 8

Assigned Rank Order, Means, Standard Deviations, and Percent of Use of Patient Coping Responses Used to Deal with Life Style Changes

	Sample (N=40)				Age Group											
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	< 50 (N=14) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=13) Assigned Rank	Mean	S.D.	% of Use (N)
	When trying to deal with the changes I had to make in my life style after my heart attack, I. . .															
1	Said to myself things could be alot worse (E)	2.18	1.08	85% (34)	3	1.79	1.89	79% (11)	1	2.40	.87	92% (12)	1	2.39	1.12	85% (11)
2	Tried to get the facts before I decided to take any action (P)	2.03	1.19	80% (32)	1	2.14	1.09	86% (12)	3	2.00	1.29	77% (10)	4	1.42	1.25	77% (10)
3	Believed such changes interfered little with my normal life-style (P)	1.68	1.19	75% (30)	8	1.29	1.27	64% (9)	2	2.23	.93	92% (12)	3	1.54	1.2	69% (9)
4	Tried to look at the changes as a challenge I had to overcome (E).	1.65	1.12	75% (30)	3	1.79	1.05	86% (12)	4	1.77	1.10	77% (10)	5	1.39	1.26	62% (8)
5	Tried to set goals for myself (E)	1.60	1.13	75% (30)	5	1.64	1.01	86% (12)	7	1.46	1.30	62% (8)	2	1.69	1.16	77% (10)
6	Tried to plan for only one day at a time (P)	1.49	1.25	63% (26)	2	1.90	1.04	85% (12)	6	1.50	1.39	62% (8)	8	1.0	1.22	46% (6)
7	Reviewed my life and thought about things I wished I had done differently (E)	1.33	1.10	68% (27)	6	1.36	1.01	79% (11)	8	1.39	1.12	69% (9)	7	1.23	1.24	54% (7)
8	Asked someone I respected for advice and then followed it (P).	1.28	1.28	55% (22)	9	.86	1.01	43% (6)	5	1.60	1.45	62% (8)	5	1.39	1.26	62% (8)
9	Tried to decide for myself if the change was really necessary and did what I felt I should do whether or not it agreed with my doctor's opinion (P)	1.0	1.20	48% (19)	6	1.36	1.22	64% (9)	9	.69	1.18	31% (4)	10	.92	1.19	46% (6)
10	At times found myself resisting change.(E)	.90	.96	55% (22)	9	.86	.70	57% (8)	9	.69	.86	46% (6)	9	1.15	1.07	54% (8)
11	Occasionally expressed my anger or resentment for having to make such changes(E)	.43	.71	30% (12)	11	.57	.75	43% (6)	11	.46	.77	31% (4)	11	.23	.59	15% (2)

Note. E = emotion controlling; P = problem focused.

Table 9

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Patient Coping Responses for Maintaining Relationships with Health Care Professionals

		Sample (N=40)			Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	During my recovery, it was important to me that. . . .															
1	Ask questions to find out what was happening and why (P)	2.40	1.03	87% (35)	1	2.43	1.09	86% (12)	1	2.31	1.11	85% (11)	1	2.46	.97	92% (12)
2	Talked directly with my doctor whenever I needed to have my questions answered (P)	2.02	1.17	83% (33)	2	2.14	1.10	86% (12)	1	2.31	1.03	92% (12)	3	1.62	1.33	69% (9)
3	Be a "good patient" (P)	1.90	1.28	75% (30)	3	1.50	1.23	71% (10)	3	2.23	1.30	77% (10)	2	2.00	1.30	77% (10)
4	Let others know exactly how I felt about the care I received (E)	1.21	1.13	63% (26)	5	1.00	1.08	62% (9)	4	1.23	1.30	54% (7)	4	1.39	1.04	77% (10)
5	Kept my feelings about my care to myself because I knew they were doing the best they could (E)	1.15	1.15	59% (24)	4	1.46	1.20	69% (10)	5	1.00	1.29	46% (6)	5	1.00	1.00	62% (8)
6	Did not bother my doctor with my concerns because I knew he was a very busy man (E)	.68	.99	37% (15)	6	.71	.99	43% (6)	6	.30	.63	23% (3)	5	1.00	1.22	46% (6)

Note. E = emotion controlling, P = problem focused

Table 10

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Patient Coping Responses

		Sample(N = 40)			Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	During my recovery when I felt upset, I. . .															
1	Tried to accept the possibility that I could have another heart attack but found comfort in knowing I was doing everything I could to avoid having one (E)	1.86	1.20	83% (33)	1	1.78	1.83	86% (12)	1	2.46	1.05	92% (12)	2	1.38	1.26	69% (9)
2	Tried to tell myself that things will work out, that I would recover (E)	1.80	1.16	75% (30)	1	1.78	1.05	79% (11)	2	2.40	1.20	85% (11)	4	1.23	1.30	54% (7)
3	Tried not to think about the possibility of another heart attack by thinking about more pleasant things in my life (E)	1.65	1.27	73% (29)	3	1.50	1.16	79% (11)	3	2.15	1.21	85% (11)	3	1.31	1.38	54% (7)
4	Tried to talk with someone I felt close to (E)	1.33	1.29	60% (24)	7	.92	.92	57% (8)	4	1.54	1.51	54% (7)	1	1.54	1.19	69% (9)
5	Tried to think as to what caused my feelings (P)	1.10	1.11	60% (24)	9	.79	.70	64% (9)	6	1.39	1.32	62% (8)	5	1.15	1.21	54% (7)
6	Tried not to let others know I was upset (E)	1.00	1.16	50% (20)	7	.92	.99	57% (8)	4	1.54	1.27	69% (9)	9	.54	1.05	23% (3)
7	Tried to think back how things could be different (E)	.98	1.17	50% (20)	4	1.21	1.30	57% (8)	8	.85	1.14	45% (6)	7	.85	1.07	46% (6)
7	Tried to get away and be by myself (E)	.98	1.18	48% (19)	5	1.07	1.30	50% (7)	7	.92	1.11	54% (7)	6	.92	1.26	38% (5)
9	Let off steam by having an occasional argument with family members (E)	.83	1.13	43% (17)	6	1.00	1.11	57% (8)	10	.77	1.16	38% (5)	8	.69	1.18	31% (4)
10	Took medication to assure that I got enough rest and relaxation (P)	.60	1.10	28% (11)	11	.57	1.02	29% (4)	9	.84	1.35	31% (4)	10	.39	.87	23% (3)
11	Ate or drank something to calm down. (E)	.36	.84	18% (8)	10	.69	1.11	31% (5)	11	.07	.28	8% (1)	11	.31	.86	15% (2)

Note. E = emotion controlling; P = problem focused

Table 11

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Patient Coping Responses for Preparing for an Uncertain Future and Managing Losses

	Sample(N = 40)				Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	Since my heart problem has developed I . . .															
1	Have changed some of my life-style habits (P)	2.00	1.00	87% (35)	1	2.07	.99	86% (12)	2	1.92	.99	92% (12)	1	2.00	1.08	85% (11)
1	Believe my life won't be changed much at all (E)	2.00	1.04	90% (36)	5	1.64	1.08	86% (12)	1	2.46	.87	77% (10)	2	1.90	1.04	85% (11)
3	Found that I am trying to learn as many facts as possible about heart disease (P)	1.90	1.12	82% (33)	2	1.92	1.12	85% (12)	2	1.92	1.04	85% (11)	3	1.85	1.28	77% (10)
4	Focused more on hobbies (P)	1.75	1.21	78% (31)	3	1.70	1.14	86% (12)	4	1.69	1.32	69% (9)	4	1.84	1.28	77% (10)
5	Often worried about what the future would be like (E)	1.64	1.04	74% (32)	6	1.54	1.13	77% (11)	5	1.62	.96	85% (11)	5	1.77	1.09	77% (10)
6	Have made sure things are in order in case something unexpectedly happens again (i.e., wills, business matters) (P)	1.59	1.29	67% (27)	4	1.69	1.25	77% (11)	7	1.47	1.30	62% (8)	6	1.46	1.13	62% (8)
7	Have dropped former activities that were stressful (P)	1.53	1.22	68% (27)	7	1.50	1.23	71% (10)	6	1.61	1.39	62% (8)	6	1.46	1.13	69% (9)
8	Believe my life has new meaning (E)	1.13	1.22	53% (21)	9	1.00	.88	64% (9)	8	1.23	1.40	46% (6)	8	1.15	1.41	46% (6)
9	Have set new goals for my future (P)	1.10	1.27	50% (20)	8	1.23	1.24	62% (9)	9	1.07	1.40	38% (5)	10	1.00	1.20	46% (6)
10	Daydream occasionally(E)	.95	1.18	45% (18)	10	1.14	1.29	50% (7)	10	.84	1.07	46% (6)	11	.85	1.21	38% (5)
11	Have pushed myself even harder to get back to my former self (P)	.75	1.03	40% (16)	11	.64	.93	36% (5)	12	.46	.88	31% (4)	9	1.15	1.21	54% (7)
12	Occasionally blow off steam when I had to cut back on my activities (E)	.68	1.02	37% (15)	12	.78	1.03	43% (6)	10	.84	1.20	38% (5)	12	.39	.65	31% (4)

Note. E = emotion controlling; P = problem focused

Table 12

Assigned Rank Order, Means, Standard Deviation and Percent of Use of Patient Coping Responses in Maintaining Relationships with Family Members

Sample (N=40)					Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use
	During my recovery, when I thought about my relationships with my family, I. . .															
1	Tried to allow my family to assume more responsibility (P)	1.45	1.15	68% (27)	1	1.57	.93	79% (11)	2	1.54	1.39	62% (8)	1	1.23	1.16	62% (8)
2	Found myself doing more with my spouse (P)	1.30	1.26	48% (23)	6	1.07	1.14	57% (8)	1	1.6	1.39	62% (8)	1	1.23	1.30	54% (7)
2	Found myself talking with my family for support (P)	1.30	1.29	55% (22)	2	1.5-	1.16	71% (10)	3	1.53	1.33	62% (8)	5	.85	1.35	31% (4)
4	Tried to keep my concerns to myself to spare my family (E)	1.20	1.24	55% (22)	6	1.07	1.21	50% (7)	4	1.46	1.39	62% (8)	3	1.08	1.19	54% (7)
5	Found myself doing things around the house that I should not have been doing, but did not want my family to be burdened (P)	1.15	1.22	58% (23)	4	1.21	1.12	64% (9)	5	1.15	1.21	54% (7)	4	1.07	1.11	54% (7)
7	Worried about family problems that were present before my attack (E)	.90	1.01	58% (23)	5	1.2	.89	86% (12)	6	.92	1.19	46% (61)	6	.54	.88	38% (5)
7	Often wondered if those relationships would change (E)	.85	1.03	48% (19)	2	1.5	1.16	71% (10)	7	.54	.78	38% (5)	7	.46	.78	31% (4)

Note. E = emotion controlled coping; P = problem focused coping

Table 13

Assigned Rank Order, Means, Standard Deviation and Percentage of Use of Patient Coping Responses in Preserving Self-Image and Maintaining a Sense of Control

	Sample (N=40)				Age Group											
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
					Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use
	After my heart attack, I. . .															
1	Allowed others to take care of me until I was able to resume normal activities (P)	1.80	1.09	83% (33)	1	1.86	1.10	86% (12)	1	2.00	2.3	85% (11)	1	1.54	1.05	77% (10)
2	Reviewed my life and felt satisfied with the way things turned out for me and my family (E)	1.39	1.16	69% (28)	5	1.15	1.07	69% (10)	2	1.46	1.30	62% (8)	1	1.54	1.13	77% (10)
3	Tried to do everything I could for myself even though at times I would over do. (P)	1.28	1.15	62% (25)	2	1.50	1.16	71% (10)	4	1.15	1.14	62% (7)	4	1.15	1.21	54% (8)
3	Tried to tell myself nothing had changed, that I was the same person I had always been (E)	1.28	1.15	62% (25)	4	1.2	1.05	71% (10)	3	1.30	1.38	54% (7)	3	1.31	1.11	62% (8)
5	Viewed myself as a different person(E)	.85	1.12	43% (17)	3	1.21	1.30	57% (8)	5	.77	1.09	38% (5)	6	.54	.88	34% (4)
6	Worried about what other people thought of me (E)	.80	1.02	45% (18)	6	1.14	1.10	64% (9)	5	.77	1.09	38% (5)	7	.46	.78	31% (4)
7	Reviewed my life and wished things could be different (E)	.64	.87	44% (18)	8	.46	.52	46%	7	.76	1.01	46% (6)	5	.69	1.03	38% (5)
8	Blamed myself for having a heart problem (E)	.51	.91	31% (13)	7	.53	.96	31% (5)	8	.61	.96	38% (5)	8	.39	.87	23% (3)

Note. E = emotion controlled coping; P = problem focused coping

Table 14

Assigned Rank Order, Means, Standard Deviation and Percent of Use of Patient Coping Responses in Maintaining Role Responsibilities

Assigned Rank	Coping Response	Sample (N = 40) Mean	S.D.	% of Use (N)	Age Group: < 50 (N=14) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=13) Assigned Rank	Mean	S.D.	% of Use (N)
	During my recovery, I. . . .															
1	Made changes in my work situation (P)	1.28	1.29	60% (24)	2	1.28	1.20	64% (9)	2	1.62	1.32	69% (9)	1	.92	1.12	46% (6)
2	Tried to keep in contact from time to time with people I worked with until I was able to actually return to my job (P)	1.26	1.29	51% (21)	1	1.85	1.14	77% (11)	3	1.15	1.34	46% (6)	2	.77	1.24	31% (4)
3	Found myself walking away from stressful situations at work (P)	1.18	1.31	48% (19)	3	1.14	1.29	50% (7)	1	1.90	1.19	77% (10)	3	.46	.86	15% (2)
4	Worried about what capacity I would be able to work when I returned to my job (E)	.85	1.00	50% (20)	3	1.14	1.10	64% (9)	4	1.00	1.00	62% (8)	4	.39	.77	23% (3)
5	Found myself doing things I probably should not have been doing but did them because the job demanded it (P)	.40	.71	28% (11)	5	.42	.76	29% (4)	6	.46	.77	31% (4)	5	.31	.63	23% (3)
6	Returned to work before my doctor gave me his approval (P)	.35	.83	18% (7)	7	.14	.54	7% (1)	5	.62	1.04	31% (4)	5	.31	.86	15% (2)
8	Would blow off steam by arguing with family members why I should return to work before my doctor actually gave his approval (E)	.21	.62	13% (6)	6	.23	.31	8% (2)	8	.31	.63	25% (3)	7	.07	.28	8% (1)

Note. E = emotion controlled coping; P = problem focused coping

effectiveness. The mean effectiveness score, standard deviation, and percent of use are given for each response. Rankings for all items according to the different age groups are also listed.

As shown in Table 6, in dealing with the symptoms of the illness, cognitive efforts that neutralize or attempt to control the meaning of stress were perceived more effective and used more by patients than direct action responses which alter or modify stress. Specifically, responses that minimized, e.g., "telling myself all that can be done was being done" and "it was not serious," and selectively ignoring stresses, e.g., "kept busy or tried to concentrate on more pleasant things" were ranked high while problem-solving efforts, e.g., "taking medications to make me feel better" and "visiting or telephoning the doctor for help" were ranked low. Eighty-five percent of patients between age 50 and 65 "talked with family and friends as to how they were feeling" and ranked the item high in perceived effectiveness. Yet the majority of patients in the other two age groups found it more helpful to keep problems to themselves so as not to worry others. An overwhelming majority of the middle aged patients (85%) also found it helpful to turn to their religious beliefs for comfort compared with 54% of the older patients and only 36% of those under 50. A confounding finding in the data was that the majority of patients in all age groups found it helpful to seek out information about what ailed them but did not find it helpful to turn to their physicians for such help.

Reasons as to why patients were not stressed by the day-to-day inconveniences of the hospital setting can be inferred from the

types of coping responses they used in dealing with the stress of treatment. As shown in Table 7, most patients found it helpful to minimize the negative aspects of care while maximizing the positive. Most found it helpful to reassure themselves that they were getting the best care available and tried to look at the good things that were done weighing them against the bad, in order to gain a more favorable perspective of their illness. These cognitive efforts all attempt to manage the emotions accompanying the stressful situations by altering appraisal. Efforts at problem-solving were ranked only moderately high in effectiveness while affective expression, e.g., talking with others and letting feelings out, were ranked low. Older patients especially thought it best not to bother others with their concerns regarding the treatment they received and were least likely to bring them to the attention of staff members.

In dealing with lifestyle changes, managing upsetting feelings, and preparing for the uncertain future, patients again perceived responses that minimized stress to be most effective followed by problem-solving efforts and affective expression. Tension reducing behaviors such as eating, drinking, or taking drugs were ranked low with less than one-third of the patients engaging in such tactics (See Tables 8, 9, 10). There were, however, some age differences in this pattern. Younger patients sought out information more and were less likely to minimize how their illness interferred with their life. Middle aged and older patients,on the other hand, believed their lives would not be changed much at

all and were more likely to talk with others about their concerns regarding these issues.

As demonstrated by the Stress Card Sort, the majority of patients did not perceive relationships with health care providers as stressful. Problem solving efforts to seek out information from health care providers and efforts at keeping complaints to themselves proved most effective (See Table 11). In maintaining relationships with family members the small range of mean scores (range = .85 to 1.45) and the large standard deviations suggested that a variety of strategies were used with varying degrees of effectiveness. Coping efforts did reflect the enormous amount of ambivalence patients had about having to depend on others while they recovered. While the majority of patients found it helpful to allow family members to assume more responsibility, over half also overdid at times so as to not burden family members (See Table 12). Interestingly, middle aged and older patients found it helpful to do more with their spouses after their heart attack while younger patients benefitted most by discussing their feelings with family members. Also a considerably higher number of younger patients (86%) worried about ongoing family problems throughout their recovery, suggesting that the timing of a heart attack early in life may be more disruptive in families already taxed by the demands of its growing members.

Tables 13 and 14 list the coping strategies used by patients, to maintain role responsibilities and to preserve self image and control. As expected, mean scores for patients over age 65 were

low and reflect the large number of older patients who were retired. Keeping in touch with co-workers while recuperating at home, making changes in their job situations, and learning to walk away from stressful situations were ranked most helpful. Over half of the patients worried about in what capacity they would be able to return to their jobs and seven patients (18%) returned before getting approval from their doctors.

In summarizing patients' coping efforts, a variety of strategies were used in response to the demands imposed by the adaptive tasks of the illness. While both problem-solving and emotion-controlling efforts were used, cognitive attempts at neutralizing or controlling the meaning of the threat, e.g., minimization, seeing the positive, selectively ignoring, and avoidance were perceived more effective in dealing with symptoms of the illness, changes in lifestyle, and managing upsetting feelings. Problem-focused efforts, especially information seeking, were perceived more effective in maintaining relationships with health care providers, managing the stress of treatment and maintaining role responsibilities. Very few patients found it helpful to let their feelings out or discuss their concerns with others but did utilize available social support networks to seek advice and companionship. Also while patients did not see its effectiveness, many engaged in "the work of worry" (anticipatory coping; Janis, 1967) to deal with uncertainty regarding the illness process and their unpredictable future.

Although there were no clear cut age differences in coping,

both young and older patients tended to minimize and keep concerns to themselves while middle aged patients were more likely to turn to family members or friends for help and emotional catharsis. Some age differences in coping also reflected the different stresses confronting patients of various ages, e.g., older persons did not perceive any strategies to be very effective in maintaining work responsibilities.

Analysis of Spouse Stresses

According to Table 3 spouses averaged approximately the same number of stresses as did patients and had similar mean overall stress scores. The variance of scores, however, was not as great with spouse stress scores ranging from 19 to 106. Table 15 ranks the various stresses contained in the spouse card sort according to mean scores. "Staff members who were curt with me while my spouse was in the hospital" was ranked least stressful while "the possibility of my spouse having another attack" was ranked most stressful. In contrast to patients, spouses were more homogeneous in their perceptions of the different types of stresses as indicated by the smaller standard deviations of all stress items.

According to the table, most items ranked high in stress dealt with managing symptoms of the illness. Spouses were distressed not only by the pain patients had at the time of the attack and by their feelings of fatigue which persisted throughout the recovery, but were also distressed by not knowing how to interpret everyday aches and pains or what action to take if the

Table 15

Assigned Rank Order, Means and Standard Deviations for 55 Stress Items Related to the Recovery as Ranked by 31 Spouses

Sample(N = 31)				Sample (N= 31)			
Assigned Rank	Item	Mean	S.D.	Assigned Rank	Item	Mean	S.D.
1	The possibility of my spouse having another attack	1.84	.74	11	I felt down, depressed after my spouse's heart attack	1.26	.89
2	Seeing my spouse sick when he/she had always been healthy	1.77	1.04	11	How my spouse was handling his/her feelings (temper, anxiety)	1.26	.93
3	The pain my spouse experienced	1.71	1.10	14	I had difficulty getting enough rest and sleeping well following my spouse's heart attack	1.19	.95
3	My spouse feeling weak and tired after his/her heart attack and wondered whether or not he/she would feel strong and healthy again	1.71	.90	14	The possibility of my spouse having to go back in the hospital	1.19	1.01
5	Wondered what I should do if my spouse continued to have severe pain or another heart attack	1.65	1.05	16	Whether or not I took appropriate action when my spouse first experienced his/her heart attack	1.16	1.10
6	Not knowing the meaning of every little symptom my spouse had and whether or not it was related to his/her heart	1.48	1.06	17	Wondering whether or not I was doing the right things for my spouse that would help him/her recover	1.13	.81
6	Not knowing exactly what my spouse could do or could not do safely	1.48	1.15	17	The quality of our life following the heart attack, having to cut back on enjoyable activities and making the recommended life-style changes	1.13	.85
8	Worry about whether or not my spouse would have severe physical limitations following his/her heart attack	1.42	.96	17	I felt uneasy about leaving my spouse home alone	1.13	1.02
8	The possibility of additional medical tests, procedures and/or heart surgery for my spouse	1.42	.96	20	Knowing my spouse was taking medications that caused him discomfort.	1.07	1.15
10	Concerned when my spouse had another health problem and/or complications which might arise while he/she was recovering from his/her heart attack	1.39	1.20	21	I often wondered why his/her heart attack happened now	1.03	.91
11	Knowing that my spouse had difficulty falling asleep or waking up in the middle of the night and not being able to go back to sleep	1.26	1.09	21	My spouse did not always share with me how he felt	1.03	.98
				23	After my spouse's heart attack I often wondered if I was appropriately handling upsetting feelings I had	1.00	.97
				24	I wondered what our future would be like	.94	.81

Table 15 Continued

Sample (N=31)				Sample (N=31)			
Assigned Rank	Item	Mean	S.D.	Assigned Rank	Item	Mean Rank Score	S.D.
25	I was concerned about having to get tough with my spouse while avoiding additional stresses	.90	.91	38	The possibility of future medical expenses	.68	.87
26	Knowing that my spouse was not doing all he/she could do to aid his/her recovery	.87	.92	39	Worrying about how my spouse's illness would affect our relationship.	.61	.76
26	I feared being alone	.87	1.02	40	Changes in my sexual relationship with my spouse after his/her heart attack.	.58	.72
26	Not having my spouse do the things he/she formerly did	.87	.89	41	Having to give up activities that were meaningful to our lives	.52	.77
29	Visiting my spouse where there were strange machines and monitoring equipment	.84	.97	42	Quality of care my spouse received from hospital personnel (doctors, nurses, lab personnel, dieticians).	.48	.81
29	Knowing my spouse was not able to obtain pain relief from medication.	.84	1.16	42	Having doctors and/or nurses talk too fast or use words I couldn't understand	.48	.93
31	At times it was difficult for me to assume additional responsibilities while my spouse was recovering from his/her illness	.77	.85	42	Not receiving enough support and/or reassurance from other family members.	.48	1.03
32	Disappointed that we could not participate in activities that we planned before my spouse's heart attack.	.74	.86	45	Having an unfamiliar doctor(s) care care for my spouse	.45	.77
32	Having to rely on other family members for assistance	.74	1.06	45	Having different doctors tell me conflicting reports about my spouse	.45	.85
32	Long-standing family problems.	.74	.86	45	Not being able to get in touch with my spouse's doctor when I needed to	.45	.89
32	Thoughts about my spouse not being able to support and/or care for our family in the way he/she did before his/her heart attack	.74	1.00	48	I was concerned about what doctors/ nurses might think or say about the way I acted after my spouse's heart attack	.32	.70
32	Changing future plans	.74	1.03	49	I felt reluctant to ask doctors/nurses questions regarding my spouse's illness, treatment and/or progress	.29	.59
37	Not being able to see my spouse or stay in the room with him/her	.71	.97				

Table 15 Continued

Sample (N=31)			
Assigned Rank	Item	Mean	S.D.
49	Changes I had to make in my social relationships	.29	.59
51	Lack of information from doctors and nurses about my spouse's condition.	.23	.67
52	Having to find employment to supplement our income	.19	.54
53	Not having the same nurse caring for my spouse for more than one day.	.13	.43
53	Not being allowed to see or spend more time with my spouse in the hospital when I wanted to	.13	.34
53	Staff members who were curt with me while my spouse was in the hospital	.13	.43

patient were to have more pain or another attack in the future. Several items ranked high in stress by spouses were also ranked high by patients. These included: "not knowing exactly what the patient (my spouse) could or could not do safely" (6), "possibility of severe physical limitations" (8), "additional medical tests, procedures, heart surgery" (8), and "having another health problem and/or complication arise" (10). Interestingly, "not being able to sleep at night" (28) was ranked only moderately high by patients with those over 65 reporting the most difficulty with this stress item. Yet an overwhelming majority of spouses ranked "knowing that the patient (my spouse) had difficulty sleeping" (11) very high. Feeling depressed and not being able to sleep themselves were also spouse concerns that were ranked relatively high.

Concern over how patients were handling their feelings, changing one's social life, leaving the patient home alone, feeling guilty or somehow not taking appropriate action at the time of the attack and wondering whether they were handling their own upsetting feelings appropriately were ranked moderately high by spouses. Items ranked low in stress dealt with the day-to-day inconveniences of the hospital setting, difficulties with health care providers, seeing the patient not do all he or she could to aid his or her recovery, having to assume additional responsibility around the house, and not getting enough assistance from support networks. Also few spouses felt their marital relationship was strained by the illness and were not distressed

by any changes they had to make in sexual relations.

Regarding potential age differences in the data, no significant relationship was found between spouse age and overall stress scores ($r = .04$). Also, the types of stresses did not vary according to age as much as patient stresses, however, there were some definite trends in the data. Table 16 lists the most stressful items according to the various age groups of spouses.

As shown in the table, spouses less than 50 years old were most distressed by the possibility of the patient having another attack in the future and by not knowing what action to take if it did indeed occur. They worried about the possibility of the patient needing additional medical tests, procedures and/or heart surgery, and were most upset by additional health problems or complications patients had during their recovery. Spouses under 50 also ranked feeling "down" or depressed higher in stress and were more upset by how the patient was managing his or her unpleasant feelings. The item "knowing that my spouse was not doing all he or she could to aid his or her recovery" (11) was ranked highest by younger spouses and suggests that younger patients were more likely not to comply with the prescribed medical regime.

With increasing age, spouses were more upset with the pain patients experienced at the time of the attack and worried about whether they took appropriate action. Similar to younger spouses, those who were middle aged ranked "the possibility of the patient having another attack" high in stress. In addition, middle aged spouses were more shocked to see their spouse sick because

Table 16

Rank Order for the Most Stressful Items According to Select Age Groups of 31 Spouses

< 50 (N=11)	50-65 (N=13)	65+ (N=7)
1. Possibility of another M.I.	1. Seeing spouse sick when he/she had always been healthy	1. Spouse's pain
2. Not knowing what to do if he/she had more pain	2. Possibility of another M.I.	2. Spouse feeling weak and tired
		2. Feared severe physical limitations
		2. Worry about every little symptom my spouse had, whether or not it was related to their heart
		2. Whether or not I took appropriate action when my spouse first had heart attack
3. Spouse feeling weak and tired	3. Spouse's pain	3. Seeing spouse sick when he/she had always been healthy

Table 16 Continued

< 50 (N=11)	50-65 (N=13)	65+ (N=7)
4. Feared physical limitations	4. Worry about every little symptom my spouse had whether or not it was related to their heart	4. My spouse having another health problem or complication.
4. Possibility of additional medical tests, procedures, heart surgery		4. Possibility of another M.I.
4. Feeling "down" or depressed		
5. Spouse's pain	5. Spouse feeling tired and weak	5. Not knowing exactly what my spouse could or could not do safely
	5. Not knowing what to do if spouse had more pain	5. Possibility of additional medical tests, procedures, heart surgery
		5. Spouse having difficulty sleeping
		6. Having to rely on family members for help

Table 16 Continued

< 50 (N=11)	50-65 (N=13)	65+ (N=7)
6. How spouse was handling his/her feelings (temper, anxiety, depression)	6. Wondered why this happened now	6. Worry over what I should do if spouse were to have more pain or another attack
6. How I was handling my upsetting feelings	6. Possibility of my spouse having to go back to the hospital	6. My difficulty sleeping
		6. Change in the quality of our life, having to cut back on activities
		6. Not having my spouse do things he/she normally did
7. Knowing my spouse was not doing all he/she could to aid recovery	7. Leaving spouse home alone	7. Felt down, depressed after my spouse's heart attack
	7. Possibility of additional medical tests, procedures, heart surgery	7. Spouse did not always share with me how he felt
	7. How spouse was handling his/her feelings	7. Long standing family problems

Table 16 Continued

< 50 (N=11)	50-65 (N=13)	65+ (N=7)
8. Not knowing what spouse could or could not do safely	8. Whether I took appropriate action when spouse first had heart attack	8. Whether or not I was was doing the right things for my spouse/ to hold him/her recover
8. My difficulty sleeping		8. Know my spouse was taking medication that caused his/her discomfort
8. Whether or not I was aiding spouse's recovery		

Note. Paired rankings distinguished by numerical rank reflect the same mean stress scores

they had always been healthy and ruminated more about why it happened at this point in their lives. "Not knowing exactly what the patient could or could not do safely" (4), "leaving the patient home alone" (10), and "having unfamiliar doctors care for the patient" (24) were other items ranked considerably higher in stress by middle aged spouses.

Only seven spouses were 65 years or older. Older spouses were more upset by the patient's persistent weakness and difficulties sleeping at night. They worried about every little ache or pain the patient had and wondered if it was related to his or her heart. Suprisingly older spouses believed that the patient's illness interfered more with their quality of life and ranked having to cut back on enjoyable activities and making changes in lifestyles higher in stress than younger spouses. They also found it more difficult not having the patient do the things he or she formerly did and have to depend on others for assistance with advancing age. There may be fewer alternatives to enjoyable activities for the heart attack patients as well as a constricted social support network. Although "not being able to see the patient or stay in the hospital room with him or her" (25) and "not receiving enough support and/or reassurance from other family members" (25) were only moderately stressful, both items were ranked considerably higher by older spouses than younger spouses.

Spouse Coping

In coping with the adaptive tasks of the illness, spouses

averaged 40 responses with a mean overall coping effectiveness score of 89.58 (SD ± 31.37). Coping effectiveness scores were normally distributed and ranged from 12 to 69. Spouses used a mixture of problem-focused and emotion-controlling coping responses. The proportional mean number of problem-focused coping responses was higher (M = .58: SD = .21) than the mean number of emotional-controlling responses (M = .56: SD = .17). This difference however, was not statistically significant (t[31] = .40). No significant correlations were found between spouses' age and the type of coping response or perceived effectiveness. However, as shown later in (Table 26), the strong negative correlations suggest that older spouses employed fewer coping strategies, especially less problem solving efforts and perceived them to be less effective than younger spouses.

Tables 17 through 25 list the rank order of coping responses according to the adaptive tasks. Rankings for the different age groups of spouses are also given. Very few age differences were found which most likely reflects the small number of spouses in each age group.

In dealing with the symptoms of the illness, acceptance, information seeking, keeping feelings to self so as to not upset the patient, and turning to religious beliefs for comfort, were most effective. While self-blame, expressing one's feelings, and employing tension reducing behaviors such as altering sleeping and eating habits were ranked low (See Table 17).

Spouses as well as patients believed, reassuring oneself

Table 17

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses in Dealing with the Symptoms of the Illness

		Sample (N=30)			Age Group											
					< 50 (N=11)				50-65 (N=13)				65+ (N=7)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	When my spouse was not feeling well. . .															
1.	Tried to tell myself that all that could be done was being done (E)	2.23	.81	97% (30)	4	1.91	.83	100% (11)	3	2.23	.83	92% (12)	1	2.70	.48	100% (7)
2.	Tried to find out as much as I could about what ailed him/her (P)	2.13	.88	90% (29)	1	2.09	.94	82% (9)	1	2.46	.52	100% (13)	1	1.57	1.13	100% (7)
3.	Talked with other family members or my spouse about my concerns (P)	2.19	1.06	84% (26)	1	2.09	1.14	82% (9)	1	2.46	.52	46% (6)	5	1.57	1.50	57% (4)
4.	Tried not to show my fear or anxiety so as not to worry my spouse (E)	1.87	1.12	71% (25)	1	2.09	1.04	91% (10)	4	1.69	1.25	69% (9)	2	1.86	1.06	86% (6)
5.	Turned to my religious beliefs for comfort (E)	1.68	1.38	65% (20)	4	1.91	1.38	73% (8)	7	1.46	1.45	54% (7)	3	1.85	1.06	86% (6)
6.	Tried to concentrate on more pleasant things in life (E)	1.42	1.15	68% (21)	8	1.0	1.00	64% (7)	5	1.62	1.19	69% (9)	4	1.71	1.25	71% (5)
7.	Wished somehow I could change things (P)	1.29	.94	77% (24)	6	1.36	.67	91% (10)	8	1.23	1.09	69% (9)	7	1.29	1.11	71% (5)
7.	Worried about every little ache or pain he/she had, wondered if it was related to his/her heart (E)	1.29	1.10	71% (22)	8	1.00	1.00	64% (7)	6	1.54	1.05	85% (11)	7	1.29	1.38	57% (4)
9.	Found myself altering my eating/sleeping patterns (E)	1.07	1.12	58% (18)	8	1.00	1.00	64% (7)	9	1.08	1.12	62% (8)	9	1.14	1.46	43% (3)
10.	Let my feelings out (E)	.90	1.04	48% (15)	7	1.18	.98	64% (7)	11	.69	1.12	38% (5)	10	.86	1.20	43% (3)
11.	Thought about what I did or did not do that may have caused my spouse not to feel well (P)	.81	.91	52% (16)	11	.63	.81	45% (5)	9	1.08	1.04	62% (8)	11	.57	.79	43% (3)

Note. E = emotion controlled, P = problem focused

Table 18

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses in Dealing with the Stress of Treatment and Procedures

		Sample (N=31)			Age Group											
					< 50 (N=11)				50-65 (N=13)				65+ (N=7)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	When something unpleasant happened to my spouse while he or she was in the hospital regarding his/her treatment. . . .															
1	Tried to reassure myself that he/she was getting the best possible care (E)	1.94	1.24	74% (23)	1	2.18	.87	91% (10)	2	1.90	1.38	69% (9)	2	1.57	1.50	57% (4)
2	Tried to find out as much as I could about what was going on and why (P)	1.74	1.15	74% (23)	2	1.91	1.14	82% (9)	3	1.85	1.14	77% (10)	3	1.28	1.25	57% (4)
3	Tried not to worry about the unpleasantness because I knew he/she would recover (E)	1.71	1.13	77% (24)	5	1.54	.82	91% (10)	1	2.00	1.22	77% (10)	4	1.43	1.39	57% (4)
4	Tried to stay close by, spend as much time as possible with my spouse (P)	1.67	1.38	65% (20)	3	1.82	1.47	64% (7)	4	1.77	1.36	69% (9)	5	1.28	1.38	57% (4)
5	Tried to look at the good things that also had happened and weigh what had happened against them for a better perspective (E)	1.65	1.83	65% (20)	4	1.81	1.25	73% (8)	5	1.46	1.30	62% (8)	1	1.70	1.60	57% (4)
6	Tried not to bother others with my concerns (E)	1.16	1.13	61% (19)	8	.72	.78	55% (6)	6	1.31	1.11	69% (9)	2	1.57	1.50	57% (4)
7	Talked with other spouses whose family members had similar experiences(P)	.97	1.28	42% (13)	6	1.09	1.22	55% (6)	7	1.08	1.44	38% (5)	8	.57	1.13	29% (2)
8	Tried to think about something else (E)	.81	1.01	45% (14)	7	.73	1.01	45% (5)	8	.92	.95	54% (7)	7	.71	1.25	29% (2)

Note. E = emotion controlled, P = problem focused

Table 19

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses in Dealing with Lifestyle Changes

		Sample (N=40)			Age Group											
					< 50 (N=14)				50-65 (N=13)				65+ (N=13)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	When trying to deal with the changes I had to make in my life style after my heart attack, I. . .															
1	Said to myself things could be alot worse (E)	2.18	1.08	85% (34)	3	1.79	1.89	79% (11)	1	2.40	.87	92% (12)	1	2.39	1.12	85% (11)
2	Tried to get the facts before I decided to take any action (P)	2.03	1.19	80% (32)	1	2.14	1.09	86% (12)	3	2.00	1.29	77% (10)	4	1.42	1.25	77% (10)
3	Believed such changes interfered little with my normal life-style (P)	1.68	1.19	75% (30)	8	1.29	1.27	64% (9)	2	2.23	.93	92% (12)	3	1.54	1.2	69% (9)
4	Tried to look at the changes as a challenge I had to overcome (E).	1.65	1.12	75% (30)	3	1.79	1.05	86% (12)	4	1.77	1.10	77% (10)	5	1.39	1.26	62% (8)
5	Tried to set goals for myself (E)	1.60	1.13	75% (30)	5	1.64	1.01	86% (12)	7	1.46	1.30	62% (8)	2	1.69	1.16	77% (10)
6	Tried to plan for only one day at a time (P)	1.49	1.25	63% (26)	2	1.90	1.04	85% (12)	6	1.50	1.39	62% (8)	8	1.0	1.22	46% (6)
7	Reviewed my life and thought about things I wished I had done differently (E)	1.33	1.10	68% (27)	6	1.36	1.01	79% (11)	8	1.39	1.12	69% (9)	7	1.23	1.24	54% (7)
8	Asked someone I respected for advice and then followed it (P).	1.28	1.28	55% (22)	9	.86	1.01	43% (6)	5	1.60	1.45	62% (8)	5	1.39	1.26	62% (8)
9	Tried to decide for myself if the change was really necessary and did what I felt I should do whether or not it agreed with my doctor's opinion (P)	1.0	1.20	48% (19)	6	1.36	1.22	64% (9)	9	.69	1.18	31% (4)	10	.92	1.19	46% (6)
10	At times found myself resisting change.(E)	.90	.96	55% (22)	9	.86	.70	57% (8)	9	.69	.86	46% (6)	9	1.15	1.07	54% (8)
11	Occasionally expressed my anger or resentment for having to make such changes(E)	.43	.71	30% (12)	11	.57	.75	43% (6)	11	.46	.77	31% (4)	11	.23	.59	15% (2)

Note. E = emotion controlled, P = problem focused

Table 20

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses for Managing Relationships with Health Care Providers

Assigned Rank	Coping Response	Sample(N=31) Mean	S.D.	% of Use (N)	Age Group: <50 (N=11) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=7) Assigned Rank	Mean	S.D.	% of Use (N)
	During my spouse's recovery, it was important to me that. . .															
1	Talk with my spouse's doctor whenever I needed to have my questions answered (P)	1.68	1.19	71% (22)	1	1.82	1.08	82% (9)	1	1.85	1.14	77% (10)	1	1.14	1.46	43% (3)
2	Let others know exactly how I felt about the care my spouse received (P)	.90	1.17	42% (13)	3	.91	1.14	46% (5)	2	1.23	1.30	54% (7)	4	.28	.76	14% (1)
3	Could talk with doctors/nurses about how my spouse's illness was affecting me. Let my feelings out (E)	.81	1.14	39% (12)	2	1.27	1.01	73% (8)	3	.46	1.13	15% (2)	2	.71	1.25	29% (2)
4	Did not bother the doctor with my concerns because I knew he was a busy man. (E)	.40	.85	23% (7)	4	.36	.67	27% (3)	4	.31	.75	15% (2)	2	.71	1.25	29% (2)

Note. E = emotion controlled, P = problem focused

Table 21

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses for Managing Unpleasant Feelings

Assigned Rank	Coping Response	Sample(N=31) Mean	S.D.	% of Use (N)	Age Group: < 50 (N=11) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=7) Assigned Rank	Mean	S.D.	% of Use (N)
	During my spouse's recovery, when I felt upset, I. . .															
1	Tried to talk with someone I felt close to (P).	1.90	1.33	71% (22)	2	2.00	1.34	73% (8)	2	1.54	1.39	62% (8)	1	2.40	1.13	86% (6)
2	Tried to tell myself that things will work out (E).	1.87	1.06	84% (25)	1	2.09	.70	82% (9)	4	1.46	1.20	69% (9)	2	2.29	1.11	86% (6)
3	Tried not to show my feelings so as not to upset my spouse (E)	1.65	1.11	27% (24)	8	1.27	1.01	73% (8)	1	1.69	1.18	77% (10)	3	2.14	1.07	86% (6)
4	Tried to concentrate on keeping busy (E).	1.61	1.28	68% (21)	4	1.55	1.29	64% (7)	5	1.39	1.19	69% (9)	3	2.14	1.46	71% (5)
5	Tried to think about more pleasant things in my life.(E)	1.55	1.26	65% (20)	3	1.73	1.19	73% (8)	2	1.54	1.20	69% (9)	5	1.28	1.60	43% (3)
6	Tried to think about how things could be different. (E)	1.07	1.03	58% (18)	6	1.36	.92	82% (9)	6	1.08	1.12	54% (7)	7	.57	.98	29% (2)
7	Tried to think back on what caused my upset feelings (P)	.94	1.09	48% (15)	6	1.36	1.21	64% (7)	8	.69	.85	46% (6)	6	.71	1.25	29% (2)
8	Tried to get away from myself (E)	.94	1.29	39% (12)	5	1.45	1.29	64% (7)	7	.77	1.30	31% (4)	8	.43	1.13	14% (1)
9	Ate or drank something to make me feel better (E)	.42	.81	26% (8)	9	.81	.87	55% (6)	10	.30	.86	15% (2)	9	.00	.00	00% (0)
10	Let off steam by having an occasional argument with family members (E)	.36	.80	19% (6)	10	.64	.92	36% (4)	9	.31	.86	15% (2)	9	.00	.00	00 (0)

Note. E = emotion controlled, P = problem focused

Table 22

Assigned Rank Order, Means, Standard Deviations and Percent of Use of Spouse Coping Responses to Preserve Self-Image and Maintain a Sense of Control

		Sample (N = 31)			Age Group											
					< 50 (N=11)				50-65 (N=13)				65+ (N=7)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	After my spouse's attack, I. . .															
1.	Reviewed our life together, felt satisfied with the way things turned out (P)	1.52	1.29	65% (20)	2	1.18	1.08	64% (7)	1	1.46	1.33	62% (8)	1	2.14	1.46	71% (5)
2.	Viewed myself as a different person having gone through this experience (E)	1.06	1.29	48% (15)	1	1.36	1.36	64% (7)	3	.69	1.18	31% (4)	2	1.29	1.38	57% (4)
3.	Thought about things I could have done differently which might have prevented my spouse's illness (E)	.81	1.05	45% (14)	4	.73	1.19	36% (4)	2	.85	1.07	46% (6)	3	.85	.90	57% (4)
4.	Reviewed my life and wished things would have been different (E)	.52	.81	35% (11)	3	1.00	1.00	64% (7)	4	.31	.63	23% (3)	5	.14	.38	14% (1)
5.	Worried about what other people thought of me, how I was reacting to my spouse's illness (E)	.32	.65	23% (7)	5	.46	.82	27% (3)	5	.23	.60	15% (2)	4	.28	.49	29% (2)

Note. E = emotion controlled; P = problem focused

Table 23

Assigned Rank, Mean, Standard Deviation, and Percent of Use of Spouse Coping Responses to Preserve Relationships with Family and Friends

Sample N=31					Age Group											
					< 50 (N=11)				50-65 (N=13)				65+ (N=7)			
Assigned Rank	Coping Response	Mean Rank Score	S.D.	% of Use (N)	Assigned Rank	Mean Rank Score	S.D.	% of Use (N)	Assigned Rank	Mean Rank Score	S.D.	% of Use	Assigned Rank	Mean Rank Score		% of Use
	During my spouse's recovery when I thought about my relationship with my family. . .															
1	Tried to take on additional responsibilities (P)	1.94	1.21	77% (24)	2	1.91	1.22	82% (9)	1	1.92	1.19	77% (10)	1	2.00	1.41	71% (5)
2	Found myself doing more with my spouse (P)	1.70	1.34	67% (21)	1	2.50	.71	90% (10)	2	1.77	1.36	69% (9)	8	.43	1.13	14% (1)
3	Tried to keep my concerns to myself so as to not worry other family members (E)	1.29	1.13	65% (19)	4	1.36	1.03	73% (8)	5	1.39	1.19	69% (9)	5	1.0	1.29	43% (3)
4	Tried not to talk about ongoing family problems so as to not upset my spouse (E)	1.26	1.15	61% (19)	4	1.36	1.12	73% (8)	6	1.15	1.21	54% (7)	3	1.29	1.25	57% (4)
5	Tried to let other family members assume more responsibility around home (P)	1.23	1.36	60% (20)	3	1.80	1.03	80% (9)	7	.85	.9	54% (7)	4	1.14	1.46	57% (4)
6	Found myself talking with other family members for my support. (P)	1.13	1.25	50% (16)	7	1.20	1.14	60% (7)	7	.85	1.21	38% (5)	2	1.57	1.5	57% (4)
7	Participated in events with other family members (P)	1.09	1.25	52% (16)	8	1.00	1.18	55% (6)	3	1.46	1.33	62% (8)	7	.57	1.13	39% (2)
7	Encouraged other family members or friends to talk with my spouse to find out more about his/her concerns (P)	1.09	1.24	48% (15)	4	1.36	1.28	64% (7)	3	1.46	1.26	62% (8)	9	0.00	0.00	00% (0)
9	Tried not to think about how my spouse's condition was affecting relationships with family members (E)	.71	1.04	39% (12)	9	.73	1.27	27% (3)	9	.54	.78	38% (5)	5	1.00	1.15	57% (4)
10	Let off steam by having an occasional argument with my spouse or family members (E)	.32	.75	9% (6)	10	.55	1.04	27% (3)	10	.31	.63	23% (3)	9	0.00	0.00	00% (0)

Note. E = emotion controlled; P = problem focused

Table 24

Assigned Rank, Means, Standard Deviations and Percent of Use of Spouse Coping Responses for Preparing for Uncertain Future

Assigned Rank	Coping Response	Sample(N=31) Mean	S.D.	% of Use (N)	Age Group: < 50 (N=11) Assigned Rank	Mean	S.D.	% of Use (N)	50-65 (N=13) Assigned Rank	Mean	S.D.	% of Use (N)	65+ (N=7) Assigned Rank	Mean	S.D.	% of Use (N)
	Since my spouse's heart problem developed, I. . .															
1	Believe our life has new meaning (E)	1.97	1.33	71% (22)	5	1.45	1.44	55% (6)	1	1.90	1.38	69% (9)	1	2.86	.38	100% (7)
2	Have found that my life won't be changed all that much (E)	1.81	1.14	83% (26)	1	1.82	1.08	91% (10)	2	1.85	1.14	85% (11)	2	1.70	1.38	71% (5)
3	Have taken some action to ensure things are in order in case something unexpected happens again (P)	1.42	1.26	61% (19)	3	1.55	1.37	64% (7)	3	1.70	1.25	69% (9)	4	.71	.95	43% (3)
4	Set new goals for the future (P)	1.03	1.28	42% (13)	4	1.46	1.21	64% (7)	4	1.00	1.35	38% (5)	6	.42	1.13	14% (1)
5	Have changed some of my life-style habits (P)	1.03	1.20	45% (14)	2	1.64	1.12	73% (8)	6	.69	1.12	31% (4)	4	.71	1.25	29% (2)
6	Daydream occasionally (E)	.81	1.08	42% (13)	8	.46	.93	27% (3)	5	.92	.95	54% (7)	3	1.14	1.46	43% (3)
7	Have dropped former activities that were stressful (P)	.42	.85	23% (7)	6	.82	1.02	45% (5)	7	.30	.75	15% (2)	7	.00	.00	00% (0)
8	Occasionally blew off steam when I had to cut back my activities because of my spouse's heart problem (E)	.36	.84	16% (5)	7	.81	1.17	36% (4)	8	.15	.56	8% (1)	7	.00	.00	00% (0)

Note. E = emotion controlled; P = problem focused

Table 25

Assigned Rank, Means, Standard Deviations and Percent of Use of Spouse Coping Responses to Maintain Role Responsibilities

Sample(N=31)					Age Group											
					< 50 (N=11)				50-65 (N=13)				65+ (N=7)			
Assigned Rank	Coping Response	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)	Assigned Rank	Mean	S.D.	% of Use (N)
	During my spouse's recovery, I. . .															
1	Encouraged my spouse to make changes at work (P)	1.26	1.32	52% (16)	3	1.18	1.40	45% (5)	2	1.07	1.32	46% (6)	1	1.70	1.25	71% (5)
2	Tried not to tell him/her what he/she should or should not be doing differently at work (E)	1.13	1.09	61% (19)	3	1.18	1.17	64% (7)	3	1.00	1.08	54% (7)	2	1.29	1.11	71% (5)
3	Express my concern how his/her work siutation was affecting his/her condition (P)	1.16	1.09	65% (20)	1	1.36	1.12	73% (8)	1	1.30	1.18	69% (9)	5	.57	.78	43% (3)
4	Worried about to what capacity my spouse would be able to function and carry out his/her usual responsibilities after recovery (E)	.97	.95	61% (19)	1	1.36	.81	91% (10)	5	.77	1.09	38% (5)	4	.71	.76	57% (7)
5	Made changes in my own work situation (P)	.94	1.15	45% (14)	5	.82	1.08	45% (5)	4	.92	1.26	38% (5)	3	1.14	1.22	57% (4)

Note. E = emotion controlling, P = problem focused

that the patient was getting the best possible care was helpful in dealing with the stress of treatment and procedures. In addition, over three-fourths of the spouses also ranked information seeking and maintaining a positive outlook high. Spouses over age 65 tended not to bother others with their concerns and to weigh the good things that happened against the bad in order to gain a better perspective. In comparison, 91% of middle aged spouses (10) ranked "trying not to worry about the unpleasantness because I knew he or she would recover" (1) high. Surprisingly, while the majority of spouses found it helpful to stay close by while the patient was hospitalized, very few benefitted from talking with other spouses whose family member had similar experiences (See Table 18).

According to Table 19, acceptance, minimization, maintaining a positive outlook, and information seeking were all helpful in dealing with lifestyle changes. Mean rank scores for "saying to oneself things could be alot worse" (2) and "accepting changes since nothing could be done" (7) were considerably higher for older spouses and used by all but one older spouse. Responses ranked low included actively planning strategies to help the patient alter his or her lifestyle, setting goals, and letting resentful feelings out.

Only talking to the doctor to have questions answered was perceived effective by the majority of spouses in maintaining relationships with health care providers. Less than half of the spouses let health professionals know how they felt about the

care the patient received or felt they could talk to doctors or nurses about how their spouses' illness was affecting them (See Table 20).

In managing upsetting feelings, while the majority of spouses found it helpful to talk with someone they felt close to, few chose a spouse as a confidant for fear of upsetting him or her. Minimization and distraction were also ranked high while social withdrawal and arguing with family members were ranked low in effectiveness and used by less than 40% (12) of the spouses.

In preserving one's self-image and maintaining a sense of control, spouses who were older were more likely to review their life and feel satisfied with the way things turned out and both younger and older spouses were more likely to view themselves as different people after having gone through the experience. Wishful thinking, blaming oneself for somehow causing the illness, and worrying about what others thought of them were used infrequently and ranked low in effectiveness by the majority of spouses (See Table 22).

In maintaining relationships with family members and friends, most spouses found it helpful to assume additional responsibilities around the house during the recovery period. Older spouses especially found it helpful talking with other family members for their support while younger and middle aged spouses were more likely to engage in more activities with the patient. Middle aged spouses also found it helpful to participate in events with

other family members and to encourage them to talk with the patient to find out more about his or her concerns. Only a few spouses engaged in open arguments with patients many of whom found it not helpful to do so (See Table 23).

In preparing for the future, over two-thirds of the spouses felt their lives would not be changed all that much as a result of the patient's illness and those who were middle aged or older believed their life had new meaning. Problem solving efforts such as preparing a will, making lifestyle changes, and managing family and business matters to ensure things are left in order in case something happened again were also frequently used and ranked high in effectiveness (See Table 24).

As shown in Table 25, to maintain role responsibilities, older spouses found it helpful to encourage the patient to make changes at work while spouses who were younger were more likely to express their concern about how the patient's work situation was affecting their condition. It may well be that patients who are near retirement or working beyond retirement age have more freedom to make changes in their work situations while younger patients who know they must continue to work for a living feel they have little control over the situation.

In summarizing spouse coping responses, no clear cut patterns of coping emerged from the data. In comparison with patients, spouses used more of a mixture of cognitive efforts aimed at controlling the meaning of stress, e.g., minimization and maintaining a positive outlook, and problem-focused efforts especially

seeking information. While they found it helpful to confide in others about how they felt, they refrained from discussing their feelings with the patient for fear of upsetting him or her. Very few spouses engaged in self-blame, argued with the patient or other family members, or employed tension-reducing behaviors such as altering eating and sleeping patterns. Spouses were more apt to try to maintain an atmosphere around the home that was similar to the lifestyle they had been used to before the patient's illness and the majority believed their lives would not be changed all that much as a result of the experience. Older spouses especially were reluctant to turn to others for help, kept their concerns to themselves, and were more readily able to accept what had happened while remaining optimistic about the future. In comparison, middle aged and younger spouses were more likely to find out as much as possible about the patient's illness, rely on family members for assistance, and found themselves doing more with their spouses.

Depression During the Recovery Period

Figures 1 and 2 illustrate the percent of patients and spouses who were depressed at the various interview times. As shown in Figure 1, 70% (28) of the patients were depressed at the time of the first hospital interview and 52% (21) continued to be depressed at six months. In comparison, only 57% of spouses (17) were depressed while the patients were hospitalized and 52% (12) continued to be depressed at six months. As shown in the figures,

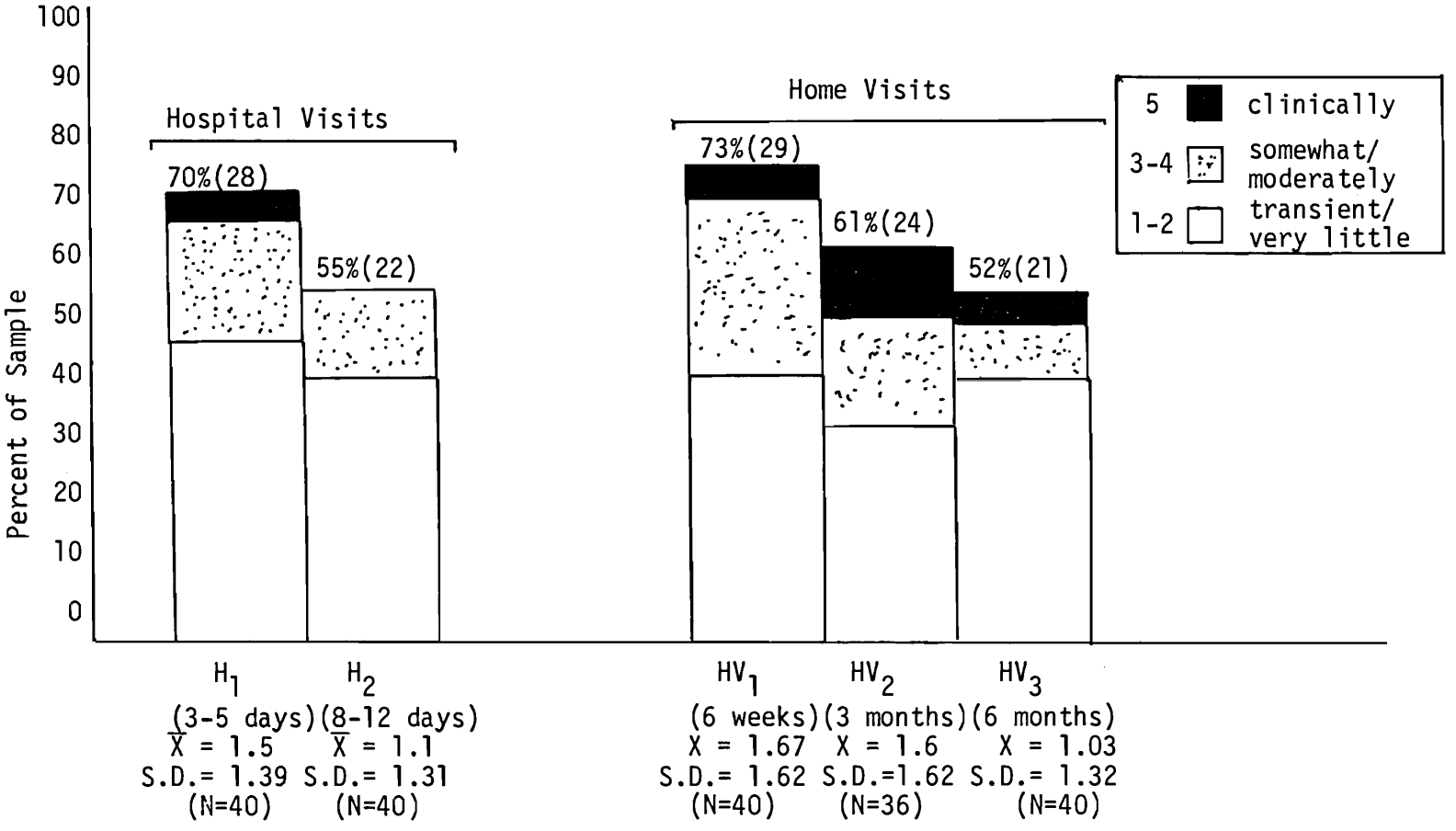

Figure 1. Percent by time interval with degree of depression for patient group (N=40)

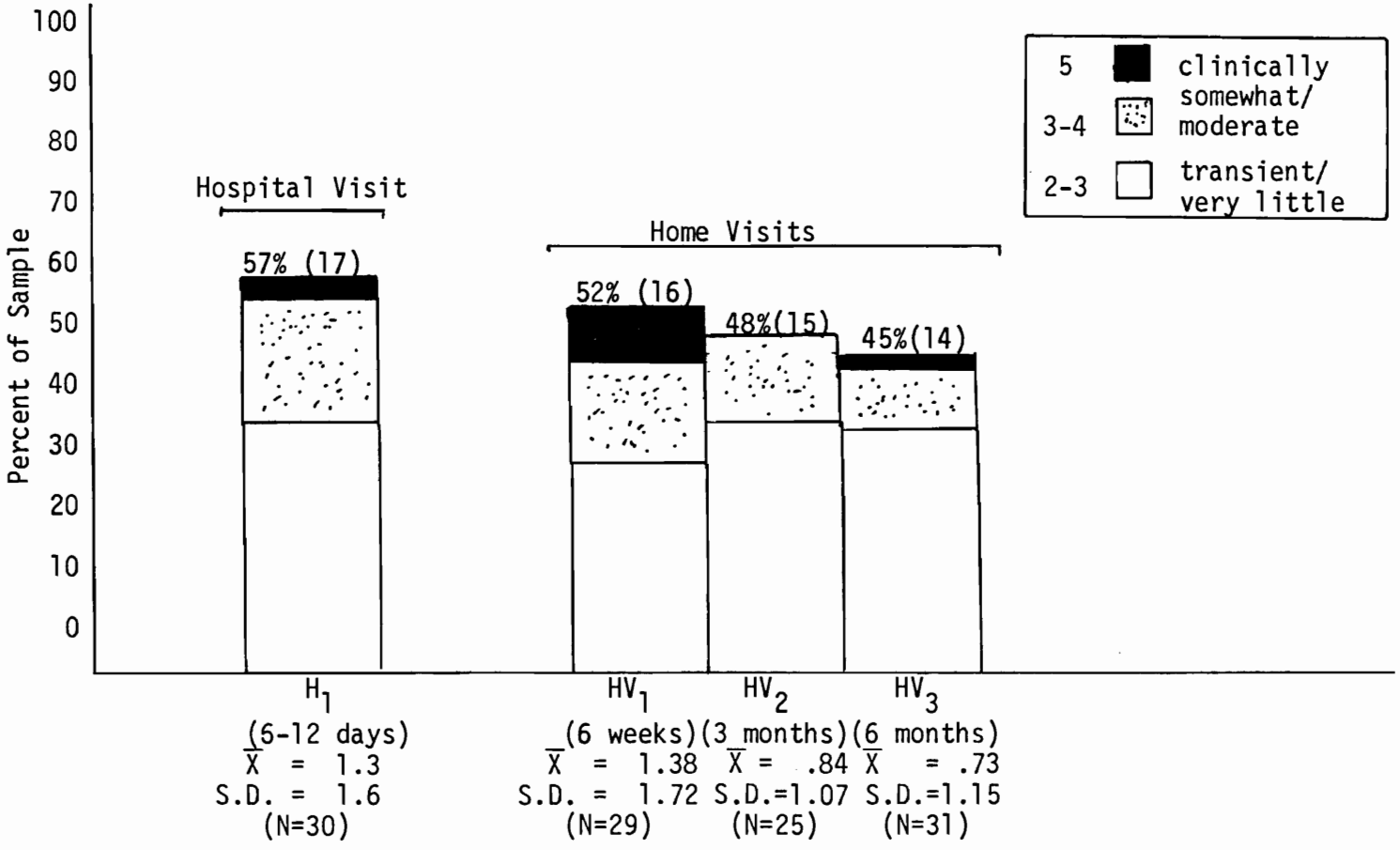

Figure 2. Percent by time interval with degree of depression for spouse group (N=31)

the majority of patients and spouses experienced reactive depressions characterized by transient recurring disturbances in mood. No more than three patients or three spouses were clinically depressed at any given time interval.

To answer research question five, Pearson product-moment correlation coefficients were obtained for mean overall depression scores and the variables of age, overall stress, number and effectiveness of problem-focused coping, and number and effectiveness of emotion focused coping for both patients and spouses.

There were no significant correlations between patients' mean overall depression scores and age ($r = -.06$), overall stress scores ($r = -.22$), number and perceived effectiveness of problem-focused coping ($r = -.08$, $r = -.13$), and number and perceived effectiveness of emotion controlling coping ($r = -.19$, $r = -.10$). For spouses there were also no significant correlations between mean depression scores and age ($r = .16$), number and perceived effectiveness or problem-focused coping ($r = -.32$, $r = .33$, respectively). However, the strong negative correlation between depression and the amount of problem-focused coping suggests that spouses who were more depressed used less problem-focused coping. There were significant correlations found between spouse depression and spouse overall stress ($r = .55$) number and perceived effectiveness of emotion-focused coping ($r = .43$, $r = .40$). Thus spouses who were more depressed, experienced more stress and relied on emotion-controlling coping as opposed to

problem-solving efforts.

Predictors of Stress

Table 26 lists the correlation matrix for patient variables. For each matrix, the last column shows the correlation of patient stress scores with each of the other study variables. Table 27 shows the correlations of patient stress scores with spouse variables. Significant correlates with stress for patients, taken individually, were the number and effectiveness of emotion-focused coping and spouse stress scores. These data indicate the patient stress scores increased as the number and perceived effectiveness of emotion-controlling efforts used by the patient increased and as their spouses' stress score increased.

Table 28 shows the correlation matrix for spouse variables and Table 29 shows the correlations between spouse stress and patient variables. Significant correlates with spouse stress scores were spouse depression, number and effectiveness of problem-focused coping, and number and effectiveness of patient emotion-controlling coping. Spouse stress increased as their depression increased and as the number and effectiveness of problem-focused and emotion-controlling coping increased. Likewise spouse stress increased as the patient's stress increased, as patient depression increased, and as the number and effectiveness of patient emotion-controlling coping increased. Because some of the significant predictors of stress for both patients and spouses were correlated with other significant predictors,

Table 26

Correlation Matrix for Study Variables for Patient Group (N=40)

	Demogrpahic						Illness					Emotional States		Coping				Stress Score
	Age	Sex	M.S.	O.S.	Ed.	Inc.	Ch. Ill.	Sev. M.I.	Risk	Readm.		$\bar{X}$ DePr	$\bar{X}$ EmoDis	# Prob. F.C.	Eff.Prob. F.C.	# Emo. C.C.	Eff.Emo. C.C.	
Demographic																		
Age		-.04	.33*	.55***	-.06	-.27	.13	-.05	-.35*	-.11		-.06	-.24	-.08	-.13	-.19	-.10	-.22
Sex			-.33*	-.28	.35*	.44***	-.55***	.03	-.01	-.11		-.47**	-.11	-.19	-.34	-.18	-.21	-.07
M.S.				.35*	-.18	-.48***	.38*	.09	.17	.17		.35*	.07	-.07	.00	-.13	-.07	-.01
O.S.					-.16	-.47***	.32*	-.10	-.27	-.07		.19	-.25	.10	-.01	.00	.02	-.10
Ed.						.51***	-.29	-.05	-.08	-.26		-.15	-.21	-.09	-.01	-.07	-.13	-.09
Inc.							.56***	.15	-.05	-.27		-.26	-.13	.01	.09	.08	.00	-.10
Illness																		
Ch. Ill.								.01	.29	.40**		.45**	.14	-.01	.07	.00	.10	-.03
Sev. M.I.									-.07	-.12		-.02	.04	.07	.29	.03	.13	-.13
Risk										.34*		.27	.18	.26	.21	.26	.32*	.13
Readm												.05	.01	.14	.19	-.01	-.05	-.03
Emotional States																		
$\bar{X}$ Depr. (N=36)													.55***	.02	.12	.17	.27	.28
$\bar{X}$ EmoDis (N=36)														-.10	.00	-.12	.20	.52***
Coping																		
# Prob. F.C.															.73***	.71***	.49***	.23
Eff. Prob. F.C.																.66***	.71***	.30
# Emo. C.C.																	.80***	.49***
Eff. Emo. C.C.																		.54***

*p<.05; **p < .01; ***p < .001

Table 27

Correlation Matrix for Spouse Variables with Patient Stress Score (N=31)

Variables	Spouse										
	Age	Sex	O.S.	Ed.	Chr. Ill.	$\overline{X}$ Depr.	# Prob. F.C.	Eff. Prob. F.C.	# Emo. C.C.	Eff. Emo. C.C.	Spouse Stress Score
Patient Stress Score	-.10	.17	-.12	-.16	-.18	-.15	.24	.22	.18	.07	.47***

*** $p < .001$

Table 28

Correlation Matrix for Patient Variables with Spouse Stress Score (N=31)

	Patient													Patient Stress Score
	Age	Sex	O.S.	Ed.	Chr. Ill.	Sev. M.I.	Risk	Re Adm	$\overline{X}$ Depr.	#Prob. F.C.	Eff. Prob. F.C.	# Emo. C.C.	Eff. Emo. C.C.	
Spouse Stress Score	.00	.02	.01	.12	.20	-.09	.23	.04	.38*	.27	.27	.51***	.46**	.47***

**p < .01; ***p < .001

Table 29

Correlation Matrix for Study Variables for Spouse Group (N=31)

Variables	Demographic				Illness	Emotional States		Coping				Stress Score
	Age	Sex	O.S.	Ed.	Chr. Ill.	$\bar{X}$ Depr.	$\bar{X}$ Emodes.	# Prob. F.C.	Eff. Prob. F.C.	# Emo. C.C.	Eff. Emo. C.C.	
Demographic												
Age		.23	.24	-.04	.25	.16	.11	-.29	-.21	-.20	.04	.04
Sex			-.42*	-.23	-.11	-.33	-.44**	.15	.06	.13	.15	-.02
O.S.				.00	.23	.29	.29	-.24	-.26	-.12	-.11	-.09
Ed.					-.36*	.14	.26	-.07	-.01	-.15	-.15	-.14
Illness												
Chr. Ill.						.41*	.35*	-.09	-.06	.04	.11	.32
Emotional States												
$\bar{X}$ Depr. (N-24)							.81***	-.32	.33	.43*	.40*	.55***
$\bar{X}$ Emodes (N=24)								.28	.48***	.47***	.56***	.63***
Coping												
# Prob. F.C.									.96***	.74***	.64***	.61***
Eff. Prob. F.C.										.73***	.70***	.62***
# Emo. C.C.											.91***	.59***
Eff. Emo. C.C.												.54***

*p < .05; **p < 01; ***p < .001

multiple regression analyses were done to further investigate these relationships. Using a stepwise procedure, the investigator determined the contribution of each predictor to the explanation of variation in patient and spouse stress. Results are given in Tables 30 through 33.

Analysis for patients resulted in a multiple correlation of .24 between patient stress scores and scores predicted by patient variables. A multiple correlation of .26 was obtained between patient stress scores and scores of spouse variables with predicted patient stress. These multiple correlations indicate that patient variables explained only six percent of the variation in patient stress scores while the spouse variable explained seven percent. As shown in Table 30, the effectiveness of emotion-controlling coping was the only patient variable which added significantly ($p = .001$) to the prediction of patient stress scores. After the entry of age on the third step the standard error of the estimate began to increase and, therefore, the procedure was terminated. The significant correlation between the number of emotion-controlling coping and patient stress scores appearing in Table 26 evidently resulted from the relationship between the number of emotion-controlling responses and their effectiveness score since the number score did not improve the prediction of stress after the effectiveness score was used. Regarding spouse variables which predicted patient stress, spouse stress scores had the highest correlation with the criterion variable and entered the equation on the first step (See Table 31). Its beta weight

Table 30

Stepwise Multiple Regression Analysis for Dependent Variable Patient Stress with Independent Patient Variables

Step Number	Independent Variable Entered	R	R^2 Adjusted	Increase R^2 Adjusted	SE est	dF	F	Beta	fb
1	Eff. Emo. F.C.	.50	.23	.23	2.66	1.34	11.21**	-.67	10.04***
2	Eff. Prob. F.C.	.53	.23	.002	.39	2.33	6.30**	-.26	1.52
3	Age	.47	.24	.003	.32	3.32	4.61**	-.16	1.17
4	Risk	.57	.23	-.002	2.20	4.31	3.68**	-.16	.91

Note. Listwise deletion accounts for the reduction in N size from 40 to 35; the dashed line appearing after step 3 indicates an increase of the standard error of the estimate

*p < .05; **p < .01; *** p < .001

Table 31

Stepwise Multiple Regression Analysis for Dependent Variable Patient Stress Score with Independent Spouse Variables

Step Number	Independent Variable Entered	R	R^2 Adjusted	Increase R^2 Adjusted	SE est	dF	F	Beta	fb
1	Spouse Stress Score	.37	.10	.10	28.14	1.22	3.51	.65	9.17**
2	Spouse Depr.	.57	.26	.16	25.56	2.21	4.95*	-.51	5.65*
3	Spouse Sex	.58	.23	-.03	25.92	3.20	3.35*	.13	.42

Note. Listwise deletion accounts for the reduction in N size from 40 to 23; the dashed line after step 2 indicates an increase of the standard error of the estimate

*$p < .05$; **$p < .01$

achieved significance at p = .01. Interestingly, spouse depression, which did not correlate with patient stress according to Table 29, was also able to increase significantly the prediction of patient stress when spouse stress scores were controlled. Its negative beta weight suggests that spouses of patients who had higher levels of stress were less depressed.

Analysis for spouses resulted in a multiple correlation of .70 between spouse stress scores and scores predicted by spouse variables. Also a multiple correlation of .48 was obtained between spouse stress scores and scores predicted by patient variables. As a result 49% of the variance in spouse stress scores was explained by spouse variables while patient variables explained 23%.

Spouse perceived effectiveness of problem-focused coping, depression, education, and age all significantly predicted spouse stress (See Table 32). The amount of increase in R^2 (adjusted) after age was entered in the equation, however, was very small although its beta weight achieved significance at $p =< .05$. Also, while perceived effectiveness of emotion-controlled coping correlated the highest with spouse stress scores, when education was entered on step four, it no longer was a significant predictor of spouse stress. Patient variables which significantly predicted spouse stress included the number of emotion-controlled coping responses patients used, sex, depression, and the number of chronic illnesses (See Table 33).

Table 32

Stepwise Multiple Regression Analysis for Dependent Variable Spouse Stress Score with Independent Spouse Variables

Step Number	Independent Variable Entered	R	R^2 Adjusted	Increase R^2 Adjusted	SE est	dF	F	Beta	fb
1	Eff. Emo. C.C.	.74	.52	.52	13.75	1.22	26.14***	.22	1.63
2	Eff. Prob. F.C.	.80	.62	.10	12.32	2.21	19.48***	.63	11.29***
3	Depr.	.84	.65	.03	11.68	3.20	15.54***	.35	5.72**
4	Ed.	.86	.69	.04	10.99	4.19	14.08***	-.34	4.99**
5	Age	.87	.69	.003	10.94	5.18	11.59***	.26	2.41*
6	Chr. Ill.	.88	.70	.003	10.85	6.17	10.06***	-.21	1.33
7	# Emo. F.C.	.89	.70	.001	10.90	7.16	8.66***	.34	.84

Note. Listwise deletion accounts for the reduction in N size from 31 to 23; the dashed line after step 6 indicates an increase of the standard error of estimate

*p < .05; **p < .01; *** p < .001

Table 33

Stepwise Multiple Regression Analysis for Dependent Variable Spouse Stress with Independent Patient Variables

Step Number	Independent Variable Entered	R	R^2 Adjusted	Increase R^2 Adjusted	S Est	dF	f	Beta	Fb
1	Pt. # Emo. C.C.	.47	.21	.21	18.57	1.26	8.06**	.48	10.36***
2	Pt. Sex	.56	.26	.05	17.92	2.25	5.77**	-.62	13.48***
3	Pt. Depr.	.67	.38	.12	16.38	3.24	6.58**	.34	4.35**
4	Pt. Ch. Ill.	.73	.46	.08	15.34	4.23	6.71**	.29	3.54*
5	Pt. Ed.	.76	.48	.02	15.03	5.22	5.99**	-.22	1.98
6	Pt. # Prob. F.C.	.77	.48	.00	15.16	6.21	5.00**	-.17	.60

Note. Listwise deletion accounts for the reduction in N size from 40 to 27; the dashed line after step 5 indicates an increase in the standard error of the estimate

*p < .05; **p < .01; ***p < .001

Thus, spouses who experienced the most stress tended to be older, had lower educational backgrounds, were more depressed during the recovery period, and had higher perceived emotion-focused coping scores. Also, patients who were more depressed, had more chronic illnesses, who were female, and who used more emotion controlled coping, had spouses who were more stressed. Figure 3 summarizes the various findings from the regression analyses.

Additional Findings

Analysis of the correlation matrix of patient variables indicate that statistically significant relationships exist between the variable age and patients' marital ($r = -.33$, $p \leq .05$) and occupational status ($r = .55$, $p \leq .001$). Such relationships are descriptive factors explaining that older patients were likely to be widowed or divorced and retired. Age was also negatively correlated with risk factors ($r = -.35$, $p < .05$). The negative direction suggests that age itself may become a significant risk factor in the development of coronary artery disease.

The patient variables of education, income, number of chronic illnesses, mean depression scores, and perceived effectiveness of problem-focused coping all had significant gender differences. Female patients had more chronic illnesses ($r = -.55$, $p < .001$), were more depressed during the recovery period ($r = -.47$, $p < .001$), and perceived the problem-focused coping responses they used to be less effective ($r = -.34$, $p < .05$). In comparison, male

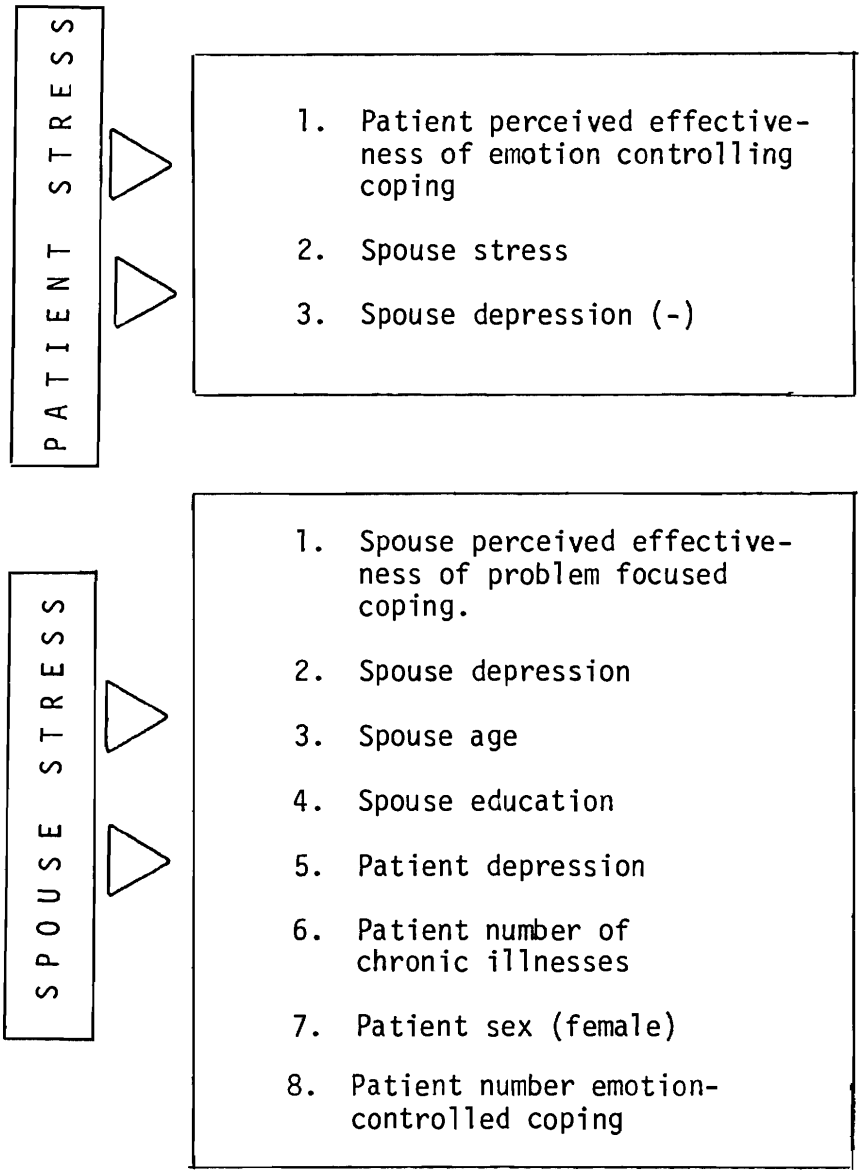

Figure 3. Summary of factors related to patient and spouse stress overall stress scores

patients were more educated ($r = .35$, $p < .05$) and had higher family incomes ($r = .44$, $p < .001$).

Significant correlation coefficients were also obtained between the variables of chronic illness, mean depression scores, and the number of readmissions. The more chronic illnesses patients had, the more depressed they were ($r = .45$), $p \leq .01$) and were more likely to be readmitted to the hospital in the recovery period ($r = .04$, $p \leq .01$). In addition, patients who were readmitted had significantly more risk factors ($r = .34$, $p \leq .05$).

Gender differences in depression scores also existed for spouses. Female spouses were significantly more depressed than male spouses ($r = -.44$, $p \leq .01$). Less educated spouses had significantly more chronic illnesses ($r = .36$, $p \leq .05$) and spouses who had more chronic illnesses were significantly more depressed ($r = .41$, $p \leq .01$).

CHAPTER IV

DISCUSSION

The purpose of this study was to explore the nature of stresses and coping processes among heart attack patients and spouses. The methodology was designed specifically to measure a person's subjective appraisal of stress and the type and perceived effectiveness of coping responses in dealing with the various adaptive tasks of the illness. Data were analyzed for specific age differences in stress and coping. Also relationships between patient and spouse overall stress scores and select demographic, illness-related variables, emotional states and type and perceived effectiveness of coping responses were explored.

Before discussing the theoretical and practical implications of these results, a few limitations of the study are in order. First, the study was essentially retrospective and therefore the ability to accurately recall stress and coping responses may have diminished with time. It was anticipated that the method of following the patient and spouse throughout the recovery, establishing rapport via a supportive and empathetic relationship and presenting a wide spectrum of potential stresses and coping responses would reduce the degree of impaired recall. Second, the sample was small, not randomly selected and consisted of

predominantly white, middle class, healthy male patients who had physiologically uncomplicated heart attacks. Third, the study was not designed to examine the relationships between stress, coping and adaptational outcomes. The rank order of mean coping responses only represents those strategies perceived effective by patients and spouses in alleviating, modifying or reducing stress. Further analyses of the data are needed to determine whether these strategies are, indeed, effective in facilitating adjustment to the illness as determined by objective physiological and psychological outcome measures.

Patient and Spouse Stresses

The first research question asked,"what are the perceived sources of stress for heart attack patients and spouses?" The data generated by the Stress Card Sorts indicate that the various stresses can be measured and quantified in an objective manner. The validity of the Stress Card Sorts was enhanced by statistically significant correlations between overall stress scores and mean emotional distress ratings of patients and spouses made by nurse interviewers at various times in the recovery. The reliability of the tools in measuring the different types of stress was supported by modestly high alpha coefficients. Also the wide range of patient and spouse stress scores attests to the tool's utility in distinguishing among persons experiencing varying degrees of distress.

Uncertainty about one's condition and the immediate future, having to depend on others for assistance and managing upsetting

feelings, e.g., anxiety and depression, were most troublsome for patients. The degree of upset caused by feelings of fatigue and worrying if one would ever feel strong again; the possibility of having more pain or another attack in the future; and not knowing what one could do safely, provides empirical support for the well-documented relationship between coronary prone behavior pattern and vulnerability to the types of stress that threaten their sense of control and mastery over the environment (Glass & Snyder, 1974). Individuals who characteristically work excessively hard all their lives to succeed have been found to suppress emotional states, e.g., anger and fatigue, which interferes with task performance and constantly work at a rapid pace in an effort to remain in control of their lives, understandably would be stressed by having to suddenly assume the sick role.

Theoretically, uncertainty arises from stressful circumstances in which the individual believes he or she has little ability to avoid or change (Epstein, 1972; Lazarus & Averill, 1972). A certain amount of uncertainty is inherent in the very nature of a heart attack, namely its sudden onset. Janis (1958) found that a moderate amount of uncertainty or anticipatory fear is necessary to prod a person to begin the "work of worry." Janis hypothesized that by mentally rehearsing potentially unpleasant events and gaining information about what to expect, the person can then develop effective forms of coping to meet the actual demands of the situation. However, no other investigators have replicated Janis's findings. Instead, most clinicians and

researchers believe uncertainty leads to low perceived control and a sense of helplessness, which in turn increases anxiety and depression. Clinical studies examining the psychological adjustment process of surgery patients repeatedly demonstrate a linear relationship between preoperative uncertainty and negative emotional states in the recovery period (Egbert, Battit, & Welch, 1964; Healy, 1968; Wolfer & Davis, 1970; Lindemann & Van Aernam, 1971). Although this study did not directly investigate the relationship between the degree of uncertainty and the presence of anxiety and depression, there was a significant, and strikingly high, correlation between patients' overall stress scores and mean emotional distress rating. That is, patients who exhibited a high degree of anxiety as judged by nurse interviewers at various times during the recovery period, also had high overall stress scores. However, there was no significant relationship between patients' stress scores and mean depression ratings although the correlation was modestly high and in the positive direction.

Data from the Patient Card Sort also supports Michel's (1981) belief that uncertainty hampers the formation of cognitive structures which, in turn, limits a person's ability to adequately appraise a situation. The items, "concern that I may have severe physical limitations" and of "being a burden to others and not being able to care for myself" were all ranked very high in stress and represent outmoded stereotypes that continue to persist which equate heart disease of any degree with permanent invalidism.

With recent advances in cardiovascular medicine, the likelihood of a patient sustaining an uncomplicated MI returning to an active and productive life is excellent and in most cases the rule not the exception.

Data from the Patient Card Sort does not support the results of previous investigators who cite having to make life-style changes, especially alterations in smoking and eating habits, sexual relations and work roles as being distressing for the majority of heart attack patients. The only lifestyle change ranked high was having to make changes in one's activity level. Furthermore, the majority of patients believed what changes they did make interfered little with their enjoyment of life. There are several plausible explanations for such findings. First, the card sort only measures the person's appraisal of what changes were stressful, not what actual changes were made. The physical assault caused by a heart attack on one's body forces a person, at least temporarily, to alter his or her activity level. However, making lifestyle changes in other areas is completely voluntary. The discrepancy in rankings may reflect that some patients did not choose to make changes in dietary and smoking habits or in work situations and, therefore, experienced little distress. Second, the amount of change a person makes depends on which risk factors they possess. The mean risk factor scores for patients were low and most likely reflect the religious beliefs and cultural values of the predominant Mormon population.

Only 30% (12) of the patients smoked and 37.5% (15) were considered overweight. Also the large number of patients who were retired or were white collar workers whose jobs did not entail heavy physical activity probably accounted for the small percentage of patients who were stressed by having to make changes in job situations. Third, regarding the lack of upset associated with changes in sexual relations after a heart attack, both hospitals had ongoing educational programs which provided preparatory information and anticipatory guidance aimed at correcting misinformation about sexual performance while recovering from the illness.

The high degree of distress associated with changes in social relationships cited in previous clinical investigations was also not supported by the results of this study. Few patients believed their spouses responded to their illness by being over-protective or showing lack of concern. Most patients were also not distressed by the way friends or coworkers treated them after their heart attack. High perceived social support from family members, friends and coworkers may account for such findings. Although this study did not objectively measure the quantity or quality of available support networks, findings from both stress and coping card sorts suggest that patients had a high degree of perceived support and that social support is not a unitary concept but has several components. Although patients preferred not to discuss their feelings with others, they did turn to family members and friends for assistance in managing

responsibilities and for companionship and advice.

Least important problems as judged by patients were: day-to-day inconveniences of the hospital setting; difficulties with health care providers; and financial worries. Again these results are contrary to those of previous investigators and more than likely reflect the difference in measuring patients' subjective appraisal of stress as opposed to reporting interviewers' impressions of the hospital environment. As Hacket and Cassem (1975) have pointed out, there is bound to be a wide margin of error when a healthy interviewer tries to attribute emotions one imagines one would feel if they were seriously ill and in the same predicament. Several other factors may have also contributed to such results. Over the past decade the media has exposed the general public to the highly technical environment of intensive care units. Monitors and IVs are no longer strange equipment and witnessing a cardiac arrest during a television program is a common occurrence. Rather than being frightened when such measures are employed, the Coping Card Sort indicated that patients felt reassured that everything possible was being done to aid their recovery. Also, both hospitals used in this study had ongoing cardiac rehabilitation programs. Quality care provided by dedicated health professionals undoubtedly is the best antedote for a highly stressful hospital environment. Regarding the lack of financial concerns, the skewed income distribution and the fact that every patient in the study had major medical insurance most likely accounted for the lack of

concern.

There have been only a few studies describing the nature of stresses experienced by spouses during the recovery period. Comparison among results, therefore, is limited. In this study spouses were most troubled by: not knowing (lack of information) how to interpret the patient's symptoms and what action they should take if the patient were to have more pain or another attack; lack of information regarding what the patient could or could not do safely in the recovery period; and by upsetting feelings, especially depression. These results underscore the need for better preparation of family members as well as patients for potential problems they may face once they leave the hospital. For spouses the vicious circle of lack of information about the nature or potentially harmful or threatening situations in the recovery period, creating cognitive uncertainty and low perceived control, which in turn increases emotional distress (anxiety/depression), seems to be supported by the data. There were statistically significant and high correlations between spouses overall stress scores and mean emotional distress ratings and depression scores. Most hospitals have educational programs which provide factual "knowledge" about the nature of coronary artery disease and its treatment. Results from this study suggest that anticipatory guidance in the form of planning and psychologically preparing family members as well as patients for what lies ahead should be incorporated into these programs.

Results from previous investigators indicating that spouses

often blame themselves for somehow causing their mates' illness, are distressed by having to assume additional responsibilities around the home and by changes in social relationships, financial worries and by changes in sexual relationships, financial worries are not supported by the results from the Spouse Card Sort. High perceived social support, the skewed income distribution, adequate information about the nature and cause of coronary artery disease and advanced preparation of what to expect regarding sexual performance in the recovery period may all account for the discrepancies.

Patient and Spouse Coping Responses

Research question two asked "what are the types and perceived effectiveness of coping responses used by patients and spouses in dealing with the various adaptive tasks of the illness?" Data from both patient and spouse Coping Card Sorts provide empirical support for Lazarus's paradigm of psychological stress which holds that coping efforts made in response to stress appraisal involve both problem and emotion-focused coping. Of the 40 patients and 31 spouses sampled, no individual reported using exclusively one type of coping. The Coping Card Sorts also demonstrated that a wide repertoire of coping responses rather than a single type of response are used in adjusting to a heart attack.

For patients and spouses, the type and perceived effectiveness of coping responses varied according to the different adaptive tasks. Patients, in dealing with the symptoms of the illness, changes in lifestyle and managing upsetting feelings,

found it more helpful to employ emotion-controlling responses which minimized, avoided, selectively ignored or saw the positive aspects of the situation. Problem-solving efforts, primarily information-seeking, were perceived more effective by patients in maintaining relationships with health care providers, managing the stress of treatment and in maintaining role responsibilities. Spouses, however, used more of a mixture of information-seeking and cognitive efforts which altered the appraisal of stress to deal with the various adaptive tasks of the illness. In general, the pattern of responses for both patients and spouses supports Lazarus' (1980) contention that in situations where there is a high degree of uncertainty (low perceived control), e.g., in managing the symptoms of the illness, there is a decrease in direct action responses and an increase in information-seeking. When the information is not available or perceived ineffective, individuals resorted to cognitive efforts which altered the appraisal of stress, e.g., selectively attending to the positive aspects of the situation while minimizing the negative ones, and managed the accompanying emotions. Thus, appraisal processes, whether a situation has potential for amelioration by action, determined the mode of coping used. The reliance on emotion-controlling responses and the decrease use of problem-solving efforts in dealing with physical illness and disability has been reported by others (Folkman & Lazarus, 1980; Cohen & Lazarus, 1980; Moos, 1977; Lipowski, 1970). While problem-solving has long been considered a prime requisite for successful adapta-

tion, this growing body of empirical results suggests that perhaps a balance between problem-focused and emotion-controlling coping is necessary to preserve optimum health and well-being.

Both patients and spouses believed maintaining a sense of hope or optimism or seeing the positive aspects of the situation was a highly effective coping skill. Investigators interested in adaptational processes of hemodialysis and cancer patients have reported similar results. In assessing coping skills of families of acutely ill patients in intensive care units, theorists have speculated that maintaining a sense of optimism or hope is of paramount importance for adaptation (Baldree, Murphy & Powers, 1982; Mages & Mendelsohn, 1980; Simko, 1975). Remaining optimistic allows a person to become aware of alternative options for coping with stress. With more available alternatives, the individual is more apt to feel in control of the situation and less vulnerable to feelings of helplessness.

The importance of this sense of mastery or being in control of stressful situations is a common theme in psychological literature. Experimental and clinical evidence indicate that when people perceive that they can control outcomes by their actions in stressful situations, they show improvement in their ability to effectively cope with the situation; whereas when people perceive themselves as lacking control, they show signs of increased stress and diminished effectiveness in stress problem-solving. Data from both the patient and spouse Coping Card Sorts suggest, however, that individuals may go so far as to isolate themselves from a significant others in order to maintain a sense of

control over the situation. Patients, in particular, were more likely to keep their feelings to themselves, avoided asking their doctors for help and tended not to seek assistance from family members or friends during their recovery. While spouses did find comfort in discussing their feelings with others, they did not turn to the patient for fear of upsetting him or her. The majority of patients and spouses also did not seek advice from persons in similar situations. Not seeking help may stem from feelings that one's behavior is inappropriate because somehow they should be able to cope no matter what the circumstances are. This belief that one must be strong and "invincible" while giving a false sense of power and control, denies the need for closeness and support. There is considerable evidence which suggests that ventilatory feelings facilitate adaptation to life crises (Lindemann, 1944; Andreasea & Norris; 1972). Theoretically, expression of feelings leads to "catharsis." This view was held by some of the widows studied by Glick (1974). They believed sorrow could be treated as an entity that exists in a certain quantity and therefore, by externalizing it via expression of feelings is also believed to be beneficial because it enables a person to receive information about the appropriateness of their feelings and may facilitate active problem solving by enabling the person to view the situation from a more meaningful perspective.

Among the lowest ranked coping methods were "blaming others for your problem" and "letting off steam by having an occasional

argument with family members." These responses may also indicate a strong need to maintain self-control. Drinking alcoholic beverages, altering eating habits, and taking drugs were also ranked low by patients and spouses. Because these responses may be considered socially undesirable responses to stressful situations, it is difficult to know whether the method of self-report used in this study adequately measures less desirable ways of coping. Similarly, the item "pretend that there was nothing bothering me" which, is akin to denial and was ranked low. Yet the validity of measuring an unconscious response by self-report is questionable.

Age Differences in Sources of Stesss

Research question three asked if there were any age differences in perceived stress of MI patients and spouses during the recovery period. While there were no significant correlations between the age of patients and spouses and their overall stress scores, descriptive analyses of the various stresses contained in the card sorts suggest there were differences in appraisal processes. That is, the types of stresses varied according to the different age groups of patients and spouses.

Neugarten's (1968) suggestion that it is the "off-time" or unexpected life crises that are most traumatic is only partially supported by the data. Indeed, patients and spouses who were middle aged (50-65 years old) and younger (50 years old) were shocked by the timing of the event in their lives. Patients and spouses in both age groups were more concerned about why the

illness happened now in their lives and wondered what they could have done differently maybe to have prevented its occurrence. However, older individuals were also stressed by its occurrence. The findings seem to indicate that events that were perceived most stressful by patients and spouses of different ages were those which impinged on their developmental tasks at hand. Levinson et al. (1976) noted that individuals in their thirties and forties (latter part of early adulthood) characteristically attempt to seek out stability and security in their environment. During this period in life, individuals often make deeper commitments to family life, to occupational interests and whatever is significant to them in the pursuit of a sense of security and purpose. Not surprisingly, patients in this study who were younger than 50 years old were more stressed by having to suddenly alter their lifestyles, losing income as a result of the illness, facing an unpredictable future and by the possibility of a complication or another heart attack in the future. They also worried more how their illness would affect their family and had more ongoing family problems to deal with during their recovery. Cassem and Hackett (1971) have pointed out that in heart attack patients, depression is a response to the threatened loss of control over one's environment while anxiety usually occurs in response to the uncertainty surrounding the recurrence of the attack with its attendant threat of death. Both middle aged and younger patients ranked the items dealing with these emotional states higher in perceived stress.

For patients between the ages of 50 and 65, mid-life issues included: acceptance of death and mortality; recognizing physical limitations as one ages; restructuring sexual identity and self-concept; reorientation towards work and a career; creativity and achievements; and reassessing one's primary relationships. Events most stressful for middle aged patients in the study were: dealing with the symptoms of the illness, e.g., not having enough energy and wondering if they would ever feel strong again, worrying about every little ache or pain or what to do if more pain did occur; concern about severe physical limitations; the uncertain future and possibility of further attack in the future.

Likewise, older patients who developmentally are striving to find purpose and meaning in their lives, trying to accept their physical decline and modifying their cherished goals to coincide with their physical decline were troubled most by having to depend upon others for assistance, the fear of severe physical limitations, but not knowing what one could do safely in the recovery and by having to forego social activities that were planned before their illness.

Findings from the patient Stress Card Sort also impugn Rosen and Bribringe hypothesis that older patients face a heart attack with greater equanimity (1966). That is, by virtue of their age they accept the passive, dependent sick role, while younger patients who "cling to achievement and autonomy," suffer more drastic assaults on their self-esteem. Patients in all three age groups were distressed by having to depend on others for

assistance. However, patients over age 65 ranked dependency issues considerably higher in stress. There are several plausible explanations for such findings. First, for older patients, having to depend on others for assistance in the recovery period may well be a reality and therefore, more distressing. With a decline in physical capacity, a constricting social environment and diminishing financial resources, older persons are more likely to "have to depend" on assistance from others while younger patients may only have to deal with the uneasiness caused by "thoughts" of having to rely on others. Second, our culture defines any life crisis as essentially time-limited, noting that the individual in the role of a patient is expected to recover in a certain time period. Heart attack patients are often told that in six-to-eight weeks after the infarction, they can expect to return to their former way of life. However, for an older person, recovery may take longer or the person may not have the same physical capacities as they did prior to their illness. Thus, not recovering "on time" and having to depend on others for a prolonged period of time may conjure up distressing feelings of weakness or "invalidism." Third, older persons who developmentally are more acutely aware of their eventual death, may view having to depend on others for assistance as a sign that the end is near. The latter two explanations may well account for the findings that in coping with the illness, older persons found it more helpful to keep their concerns to themselves and occasionally overdo so as not to be a "burden to others."

Age differences in the types of stresses confronting spouses

resembled those of patients and also tended to reflect the various developmental issues. Younger and middle aged spouses were distressed most by the possibility of another attack in the future while older spouses worried more about the patients' symptoms, having to depend on others for assistance and about the quality of their life. Older spouses also were more distressed by not receiving enough support from others which may reflect their constricting social environments as well as their hesitancy to ask for help. However, overall, the difference in the types of stress confronting spouses of different ages were not as contrasting as those of patients, and most likely reflected the smaller sample and more restricted age range of spouses.

Age Differences in Coping Responses

Research question four asked if the amount and type of coping used by heart attack patients and their spouses vary according to age. It has been well documented in both research and clinical studies that adaptive resources needed for effective coping diminish with age (Eisdorfer & Wilkie, 1977). Likewise, preliminary findings of recent studies on coping have suggested that with advancing age there is a switch from active problem solving efforts to a more passive stance of acceptance and resignation (Cohen, 1980; Cutler & Chiraboga, 1976). However, data from both patient and spouse card sorts do not support this type of coping difference. There were no significant relationships between the number and type of coping responses used and the age of patients or spouses. Moreover, the data

support the results of Lazarus and his colleagues who emphasized the importance of appraisal processes in determining which mode of coping is used. That is, in situations which are threatening and hold no possibility for beneficial change, persons tended to employ emotion-focused coping. However, if the situation was appraised as controllable and amenable to change, then problem focused coping was used. The age-related changes in coping that did emerge seemed to be associated with the age-related sources of stress. For example, older patients and spouses reported more distress associated with managing the symptoms of the illness than in dealing with changes in work role. Consequently, older patients and spouses relied more on minimization, distraction and acceptance in dealing with the symptoms of the illness. Yet, while in maintaining role responsibilities, older patients were more likely to make changes in job situations and spouses more likely to encourage them to do so. Folkman and Lazarus (1980) have reported similar results. However, more research investigating the nature of stress and coping of elderly persons is needed to determine if the differences in coping that emerge with advancing age are due to the differences in sources of stress.

Depression During the Recovery Period

Research question five asked if any relationships exist between depression scores and the degree of stress, type and amount of coping used by patients and spouses; also, if there were any age differences in the depression scores. The correlational

analyses indicated that no significant relationships existed among patient depression, stress and coping variables. However, spouses who were more depressed experienced significantly more stress and relied more on emotion-controlling efforts to cope with the various adaptive tasks. These findings support Seligman's (1975) learned helplessness model of depression. Feelings of helplessness and depression are thought to ensue in situations where an individual perceives he or she has little control over the outcome. Uncertainty (low perceived control) regarding how to interpret and manage the patient's symptoms and about the future were most troublesome for spouses.

While there was a significant relationship between the degree of stress experienced by spouses in the recovery period and depression scores, ongoing life crises rather than the patient's illness may account for the relationship. Case by case analysis of the data indicated that of the three spouses who were clinically depressed, one individual had a history of bipolar depression and was hospitalized during the recovery period for depression. This spouse, in her mid-forties gave birth to a child several weeks prior to her husband's infarction. The other two spouses clinically depressed in the recovery period were dying of cancer.

Verwoerdt (1981) has elucidated the many biological, sociological and psychological concomittants of the aging process that place an older person at a high risk for depressive disorders. Old age is often referred to as the season of loss, e.g., loss of job, status, spouse, and death. Data from this study, however,

do not support the findings of Goodman (1972) who cited that older heart attack patients were more likely to experience greater depression in the recovery period. No significant relationships were demonstrated between mean depression scores and the age of patients and spouses. Regarding the perceived degree of upset caused by feelings of depression, both middle aged and younger patients ranked "feeling down or depressed" higher in stress than did patients over age 65.

Predictors of Stress

The purpose of entering the select group of variables under investigation in this study into regression equations was to identify those factors which might provide direction for future investigations. Several key factors which contributed significantly to the explained variance of perceived stress for both patients and spouses did emerge from the analyses. For both patients and spouses, type of coping (problem-focused or emotion-controlling) contributed most to the variance of perceived stress. Patients whose perceived emotion-focused coping scores were higher, reported having more stress, while spouses reporting more stress, had higher perceived problem-focused coping scores. Also the number of emotion-controlled responses used by patients significantly predicted spouse stress. That is, spouses were more distressed if the patient used more emotion-focused coping. These results suggest that relying primarily on one mode of coping as opposed to a balance of problem-focused and emotion-controlled responses is associated with higher stress scores. For patients,

uncertainty surrounding their illness, having to depend on others and managing unpleasant feelings were most troublesome. The patient Coping Card Sort indicated that patients primarily used minimization, avoidance, acceptance, and maintaining a positive outlook to cope with such stress. Strategies such as information seeking, allowing others to help and discussing feelings with others were not used but may have contributed more to a sense of mastery and control over the situations thereby reducing stress levels. For spouses, in addition to perceived effectiveness of problem-focused coping education was a significant predictor of stress. Considering that information-seeking was the main problem-focused response used by spouses, perhaps those who were less educated were less likely to assimilate what information they did receive into stress reducing behaviors. Accordingly, Jenkins (1978) stated that because poorly educated persons "are less able to use feedback they receive to prevent reoccurrence of difficulties," they may be limited in resolving potential problems before they grow to distressing proportions, thereby leading to reduced coping capacity (p.68). Traditional sex-role conceptions may also explain why patients who relied more on emotion-controlled coping and spouses who relied more on problem-focused coping experienced more stress. Seventy percent of the patients (28) were male and 77% (24) of the spouses were female. Women have been found to be more emotionally responsive and sensitive while men tend to be more analytic and task-oriented (Pearlin & Schooler, 1978). As mentioned previously, there are

many aspects of the illness over which patients have little control. Therefore, having to rely on emotion-controlling efforts because little can be done to alter the situation can be very stressful for male patients who may tend to be task oriented and need to feel in control. Likewise, for female spouses, supressing feelings so as to not upset the patient and relying more on problem-solving efforts (actively seeking out information) may be foreign to their habitual ways of coping with stress. With a larger and more representative sampling, analyzing the Coping Card Sort data in terms of sex differences may provide more insight to such findings.

In addition to type of coping, spouse stress and absence of spouse depression also added significantly to the explained variance in patient stress. The finding that patients who reported more stress had spouses who were highly stressed lends empirical support to the guiding theoretical principle of family systems theory. A family is a system of mutually interacting interpersonal relationships. Stress or strain impinging on one family member invariably intrudes into the lives of other family members. The patient's persistent weakness in the recovery period was as distressful for spouses as it was for patients. While theoretical models of stress and coping place much credence on the buffering effect of social support networks, more emphasis should be directed towards identifying those conditions where social support networks also serve as a source of stress. Muellar (1982) has hypothesized that because many stressful life events may seriously disrupt,

distort, reduce or otherwise change existing network relationships, much of the impact of such events may result from the profound disturbances they introduce into one's social support network.

The absence of spouse depression as a significant predictor of patient stress scores was a surprising result. Descriptive analysis of interview data from the larger research project suggested that some spouses viewed the illness as exclusively the patient's problem and emotionally distanced themselves from the recovery process. In comparing interview data with the data from the card sort, spouses who reacted as such also ranked the item "seeing my spouse not do all he or she could to aid his/her recovery" higher in stress. Perhaps non-compliant patient behavior prompted such spouses to emotionally distance themselves and thus maintain some control in a situation over which they virtually had no influence.

While spouse depression, lower educational background and age were all significant predictors of spouse stress, the increase in R^2 was very minimal and a larger sample is needed to determine the meaningfulness of such variables in predicting spouse stress.

Patient variables which significantly increased the explained variance of spouse stress included the patient's sex (females) mean depression scores and the number of chronic illnesses. That is, patients who were female, who were more depressed or had more chronic illness had spouses who reported more stress. Virtually no studies have been done documenting the different needs and concerns of female heart attack patients and male spouses.

Understandably, having to assume additional domestic responsibilities, spending time away from work and having to leave female patients home alone may account for the higher stress scores of male spouses. Male spouses may also have been more upset seeing their wives depressed in the recovery period. According to the correlation matrices, female patients were significantly more depressed than male patients. However, because of the small number of married female patients (9) participating in this study, the descriptive data from the stress card sorts were not analyzed separately for possible sex differences in sources of stress. Further research is needed exploring potential sex differences in perceived stress before any definitive conclusions can be drawn.

Overall, much of the variation in heart attack patients and spouses perceived stress remains unexplained by the select group of variables used in this study. Stress associated with recovery from a heart attack is a very complicated phenomenon. Beliefs, values, knowledge levels, personality and cultural differences, prior experiences, and available resources all may determine the impact. A very large sample would be needed in order to isolate all the variables which may contribute to predicting stress with a reasonable degree of accuracy.

CHAPTER V

SUMMARY AND IMPLICATIONS

This study explored the nature of perceived stresses and coping responses of heart attack patients and spouses. In recent years there has been a marked increase in concern by health professionals with the psychosocial aspects of recovery from a heart attack. While improved hospital treatment and the advent of coronary rehabilitation programs have contributed to higher survival rates, many patients and spouses face considerable emotional distress and adjustment problems in the recovery period which may threaten their quality of life and overall well-being. Clinical observations of heart attack patients, however, suggest that despite similarities in physical conditions, patients and family members differ greatly in their adjustment to the illness. Some patients and family members look upon the experience as a challange and opportunity to adopt healthier lifestyles. Others experience extreme psychological distress with marked family discord leading to the permanent adoption of the sick role and the creation of a "cardiac cripple." Investigatiors interested in stress and coping have hypothesized that important mediating factors in adjusting to any life crisis are differences in how individuals appraise the situation and differences in coping efforts that are mobilized in response to the

stressful event.

Stress appraisal and coping responses are believed to be influenced by the timing of the stressful event in the life cycle. Some investigators have included that the onset of a heart attack in old age may be perceived "on time" and consequently be less stressful for older persons. Whereas younger patients are thought to experience more distress because the illness supposedly interferes with their active lifestyles. In reviewing existing literature, no systematic attempts have been made to identify the different types of stresses confronting patients and spouses while simultaneously considering the nature of coping responses mobilized in response to a heart attack. Furthermore, the importance of age as a mediating factor in adjusting to the illness has not been expored.

The objective of the study, therefore, was twofold: to describe, quantify and compare perceived sources of stress and coping efforts used by patients and spouses recovering from a heart attack; and, to determine whether there were age differences in stress appraisal and coping responses.

The theoretical framework guiding the investigation incorporated theory and research from Lazarus' cognitive-phenomenological paradigm of psychological stress; developmental life-span theories and family systems theory. Psychological stress occurring in the recovery period is believed to arise out of a troubled person-environmental relationship where demands tax or exceed available resources both internal and external as appraised by the individual

involved. It is the person's subjective appraisal of the situation as a threat, challenge or irrelevancy that is the psychological key in understanding the coping responses and emotional reactions that occur. Coping as utilized in this study referred to both problem-focused and emotion-controlling efforts which served to master, tolerate, or reduce, internal and environmental demands. The timing and sequencing of an event in the life-cycle, the developmental period of the individual, the family system and availability of individual and environmental resources shape both stress appraisal and coping responses. Resolution of the stressful event occurs when the troubled person-environmental relationship returns to a dynamic state of equilibrium.

Based on the review of literature and the theoretical framework, the study addressed the following research questions: 1) What were the perceived sources of stress for MI patients and spouses? 2) What coping behaviors did patients and spouses use during the recovery to deal with the various adaptive tasks imposed by the illness? 3) Did the severity and type of stress vary according to age? 4) Did the amount, type and perceived effectiveness of coping responses vary according to age? 5) What was the relationship between stress and coping and depression in patients and spouses during the recovery? Were there any age differences? and 6) What was the relationship among sociologic and demographic variables in the study and the degree of stress experienced by patients and spouses in the recovery period?

The design of the study was both descriptive and correlational.

The data presented were part of an ongoing research project, Preparatory-Supportive Care for MI Patients and Family (Wolfer, 1979), supported by a research grant from the Division of Nursing. Forty patients and 31 spouses admitted to two private hospitals between February and May, 1981 participated in the study.

The descriptive analysis was retrospective in that perceived sources of stress and coping responses were assessed by a card sort technique developed by the investigator and administered six months following the patient's infarction. The Stress Card Sorts assessed potential stresses confronting patients and spouses during the acute hospital phase and those occurring in the recovery period. The Coping Card Sorts assessed coping responses used by patients and spouses to deal with the eight adaptive tasks imposed by the illness. In developing the tools, the literature on stress and coping during the recovery from a heart attack was reviewed as well as twenty charts of patients and spouses followed at six months in the large research project. Following an exhaustive review, 64 potential stresses and 84 coping responses emerged for patients and 55 stresses and 71 coping responses for spouses. The different stresses and coping responses were 5 x 7 color cards. Patients and spouses were instructed to sort the Stress Card Sorts into four piles according to perceived degree of distress, and the Coping Card Sorts into four piles according to perceived coping effectiveness. Initial validity and reliability measures for the tools were encouraging.

Research questions one and two asked what were the perceived

sources of stress and coping responses for patients and spouses. Means and standard deviations were computed for all items contained in the Stress and Coping Card Sorts. Items in the Stress Card Sorts were ranked according to mean stress scores. For the Coping Card Sorts, items were ranked according to mean effectiveness scores. For patients, items dealing with the uncertainty surrounding their condition, the loss of control or predictability over their future, dependency issues and managing upsetting feelings (anxiety/depression) were most troublesome. Claims by previous investigators that patients are frequently distressed by having to make changes in lifestyles, sexual relations and work roles were not supported by the results of this study. Items ranked lowest in stress dealt with the day to day inconveniences of the hospital situation, difficulties with health care providers, concerns about the quality of care received in the hospital, feelings of isolation from support networks and financial worries.

Items most troublesome for spouses dealt with managing and interpreting the patients' symptoms, lack of information about what the patient could or could not do safely in the recovery period, uncertainty regarding the patient's future and managing unpleasant feelings. Concern over how the patient was handling his or her feelings, changing one's social life, leaving the patient home alone and feeling guilty for somehow not taking appropriate action at the time of the patient's attack were ranked moderately high in stress by spouses. Items ranked low in stress were similiar to those ranked low by patients. Dealing with the day-to-day inconveniences

of the hospital setting, difficulties with health care providers, seeing the patient not do all he or she could to aid recovery, and not receiving enough assistance from support networks were least troublesome for spouses.

Results from the patient and spouse Coping Card Sorts clearly demonstrated that a wide repertoire of coping strategies are needed to deal with the variety of demands associated with recovery from a heart attack. Patients used proportionally more problem-focused responses than emotion-controlling responses and the difference was statistically significant. Spouses also used proportionally more problem-focused responses than emotion-contributing responses, however, the difference was not significant.

Cognitive attempts at neutralizing or controlling the meaning of the threat, e.g., minimization, seeing the positive, selectively ignoring and avoidance were perceived as more effective by patients in dealing with symptoms of the illness, changes in lifestyle, and managing upsetting feelings. Problem-focused efforts, mainly information-seeking, were perceived as more effective in maintaining role responsibilities. Very few patients found it helpful to let their feelings out or to discuss their concerns with others but did utilize available social support networks to seek advice and companionship. Also, while patients did not see its effectiveness, many engaged in the "work of worry" (anticipatory guidance) to deal with the uncertainty regarding the illness process and their unpredictable future.

In comparison with patients, spouses used more of a mixture

of cognitive efforts aimed at controlling the meaning of stresses and problem-focused efforts, especially information seeking, to deal with the various adaptive tasks of the illness. While they found it helpful to confide in others about how they felt, they refrained from discussing their feelings with the patient for fear of upsetting him or her. Very few spouses engaged in self-blame, argued with the patient or other family members or employed tension reducing behaviors such as altering eating and sleeping patterns. Spouses were more apt to try to maintain an atmosphere around the home that was similiar to the lifestyle they had been used to before the patient's illness and the majority believed their lives would not be changed all that much as a result of the experience.

The pattern of coping responses used by patients and spouses tended to support Lazarus's hypothesis that in dealing with issues over which a person perceives he or she has no control, emotion-controlling responses are used more frequently. Whereas, problem-focused coping is used in situations that are appraised as having potential for amelioration by action. Problem-focused coping has long been considered a pre-requisite for adjusting to life crises, however data from this study suggest that a balance between problem-focused and emotion-controlling responses may be necessary to preserve optimum health and well-being.

Research question three and four inquired whether there were age differences in perceived stress and coping responses of patients and spouses. To examine age trends, subjects were divided into three convenient age groups: younger patients less than 50 years

old, middle aged patients 50 to 64 years and patients 65 years or older. No significant correlations were found between overall stress scores, type and perceived effectiveness of coping responses and the age of patients and spouses. However, in comparing ranked means of items perceived stressful by patients and spouses of different ages, there were definite age differences in stress appraisal. Events that were perceived most stressful were those which impinged on the developmental tasks of patients and spouses of different ages. However, there were no definite age related trends found in coping responses reported by patients and spouses. The few differences that emerged seemed to be associated with the different age related sources of stress. In this study, appraisal processes rather than the age of the respondant determined which mode of coping was used.

In answering research questions five and six, correlation and regression analyses were used to determine if any relationships existed between patient and spouse overall stress scores and the select group of variables under investigation in the study. Study variables were classified into the following four groups: demographic, illness related, emotional states and type and perceived effectiveness of coping responses. Using step-wise multiple regression analyses, significant predictors of patient stress were: patient perceived effectiveness of emotion-controlling responses, spouse stress and the absence of spouse depression. These variables explained only 13% of the variation in patient stress. Significant predictors of spouse stress were: spouse perceived effectiveness

of problem-focused coping, spouse depression, spouse age, lack of spouse education, patient depression, number of chronic illnesses of the patient, patient sex (female) and number of emotion controlled coping responses used by the patient. These variables explained 72% of the variance in spouse stress. For both patients and spouse, type of coping was the largest predictor of stress. Patients who used more emotion-controlled responses and spouses who used more problem-focused responses were more stressed. These results strongly suggest that in adequately evaluating the impact of heart attack, one must simultaneously consider the person's subjective appraisal of the different stresses and the type and perceived effectiveness of coping responses mobilized in response to such stresses.

Implications for Practice

The results of this study have many implications for health care professionals responsible for assisting patients and family members to cope and adapt to a heart attack. Health care providers who have prior knowledge about the nature of potential stresses and common ways of responding to such stress can identify patients and spouses who are at risk for psychological distress and provide anticipatory guidance and direct intervention strategies early in the recovery period to reduce, modify or alleviate such stress. Knowledge about potential stresses and coping responses also provides the content necessary for individualized patient-family teaching and counseling. As the sources of stress vary according to developmental issues confronting patients and spouses of different ages, so

must intervention strategies be individually tailored to meet such needs.

Based on the findings from this study patients who are at high risk for psychological distress in the recovery period are those who: 1) express a high degree of uncertainty regarding their illness and treatment, especially uncertainty about what they can and cannot do safely upon discharge from the hospital and how to interpret symptoms; 2) strive desperately to remain in control to the point where they avoid seeking help or assistance from others, keep their feelings to themselves and overdo at times so as not to burden others; 3) avoid seeking advice from health care professionals; and 4) have unrealistic fears of becoming an invalid. High risk patients also tend to rely primarily on emotion controlling coping efforts and have spouses who also show signs of being distressed but are not necessarily depressed in the recovery period.

In comparison, high risk spouses in need of intervention are those who: 1) are male, less educated and older; 2) express a high degree of uncertainty regarding how to interpret the patient's symptoms, what they can do safely in the recovery period and what action they would take if the patient were to have more pain or another attack; 3) worry excessively about the possibility of another attack in the future; 4) have unrealistic fears about the patient becoming an invalid; and 5) express concern about the possibility of patient needing additional medical tests, procedures, or heart surgery. Rather than using a wide repertoire of

responses, spouses at risk rely more on problem-focused coping, namely information seeking and are reluctant to discuss how the illness is effecting them with the patient or health care professionals. In addition, patients who are depressed and have more chronic illness have spouses who are likely to be at higher risk for psychological distress in the recovery period.

A major implication of the study is that the family unit, e.g., patient and spouse, should be the focus of rehabilitation efforts. The concept of involving family members in the hospital experience is not new to nursing practice. However, nurses have been negligent in operationalizing this concept into intervention strategies. While graduate programs contain courses on family theory, few baccalaureate programs educate nurses about how to actually involve family members in the day-to-day care of hospitalized patients. In addition, models of family nursing care need to be developed so that various intervention strategies can be tested and modified to meet the changing needs of families across the lifespan.

Reducing cognitive uncertainty about the illness should be a major goal of cardiac rehabilitation programs. While most programs provide factual knowledge about coronary artery disease, findings from this study indicate that patients and spouses need specific guidelines regarding what the patient can do safely in the recovery period. Outlining a specific exercise program to follow upon discharge from the hospital and providing advanced information about what it will be like when they do return home, and informing

them ahead of time of potential stresses they may confront are ways of reducing uncertainty and increasing their sense of control and mastery over the situation.

Findings from the study also dispell the myth that heart attack patients characteristically rely on denial to cope with their illness. Nurses need to be aware of the wide repetoire of responses that can be used to cope with a heart attack. In addition to helping patients and spouses actively seek solutions to problems, nursing care should also be directed towards instilling a sense of hope and optimism by drawing attention to the positive aspects of the situation while minimizing the negative, providing a climate where expression of feelings is non-threatening nor judged as being a sign of weakness, and helping them to selectively ignore unpleasant aspects of the illness over which they have no control.

Lastly, tailoring nursing intervention to meet the needs of older patients and spouses requires an awareness of not only the physiological aspects of the aging process but also sensitivity to the different developmental issues confronting older people. A major goal in working with older MI patients and spouses is to help them avoid permanently acquiring the sick role. Nursing intervention should focus on fears associated with symptoms, correcting misperceptions and distortions; educating patients and spouses about what they can expect in terms of symptoms and emotional reactions in the recovery period without placing a time limit on recovery; informing families about the prognosis and the need for continued involvement in activities of daily living.

Also older spouses should be educated about the hazzards of fostering dependency through oversolititious behavior and poor communications.

Recommendations for Future Research

The number of patients and spouses participating in the study was small. Subjects were not randomly selected and were over-represented in terms of sex, race, religious preference and socio-economic backgrounds. Therefore, caution should be exercised in applying these findings to heart attack patients in general. Recommendations for future research world first include a larger sample size, optimally 150 to 200 subjects where reliability co-efficients for the stress card sorts could be computed and norms established. Since the types of coping responses vary according to adaptive task and many of the different types of responses are repeated for the various tasks, test-retest reliability needs to be established for the Coping Card Sorts using a larger sample size. Ideally, subjects for this larger sample should be randomly selected and consist of approximately equal numbers of males and females from a variety of social, economic, religious, and cultural backgrounds.

In replicating the study, several modifications should also be made in the card sorts and in the methods of administering them. The number of items contained in the stress and coping card sorts proved to be very cumbersome in the analyses of data. Reducing the number of items to 40 or 45 in each set of cards, while maintaining adequate validity and reliability measures

should be attempted. Before having subjects sort each set, the cards should also be shuffled to eliminate any possible ordering of responses. In addition, subjects should be asked to rank order the items sorted in the different piles according to the perceived stressfulness of the event or effectiveness of the coping response. By having subjects assign ranks to items rather than assigning ranks to mean scores, more powerful statistics could be used in the data analyses.

More research also needs to be done to determine if the same results would be obtained if a nurse researcher did not follow the family throughout the recovery period before administering the card sorts at six months.

Based on the preliminary findings of this study, the following questions remained unanswered and provide direction for future research. 1) Are there significant sex differences in stress appraisal and coping responses of heart attack patients and spouses? 2) How is stress appraisal and coping related to outcome measures? That is, what stresses and coping responses are associated with poor compliance, failure to return to work, decreased physical capacity, family discord, and anxiety and depression during the recovery period? 3) Under what conditions do social support networks serve as sources of stress? 4) Is high uncertainty or low perceived control related to type of coping? 5) Are differences in coping related to age differences in appraisal processes or merely a function of personality? More research also is needed

to determine why the predictors identified in this study are associated with psychological stress in recovery from a heart attack.

APPENDIX A

PATIENT AND FAMILY INFORMED CONSENT

This study is to help health care providers, nurses and doctors, better understand what feelings and needs patients and families experience when a heart attack occurs. This information will help us to give better care to patients and their families.

Participation in this study is completely voluntary. Your care and treatment will not be affected by whether or not you participate. If you agree to participate you may withdraw your participation for any reason and at any time.

For the patient, participation will involve: 1) talking to a nurse regarding feelings and experiences during hospitalization and at intervals during a six-month period following release from the hospital; 2) completing some questionnaires regarding past experiences and responses and current feelings and experiences; and 3) giving permission for the use of medical information about treatment and recovery for research purposes. Participation in the study does not involve any special procedures or experimental treatments.

For the participating family member, involvement will include: 1) Talking to a nurse on several occasions while you are visiting the hospital about your feelings and experiences in connection with your family member's hospitalization and illness, and later, during their convalescence at home, and 2) completing some questionnaires regarding how your family typically responds under a variety of situations.

Although the interviews and questionnaires will be administered only when you are willing and able to take them, the questionnaires or interviews might be an inconvenience or bothersome at times. However, the opportunity to share one's feelings, concerns, or experiences with skilled listeners can be helpful and worthwhile. In any event, it will always be your right to take the questionnaires or interviews, whenever you want. It is also your right to not answer any part of a questionnaire or interview.

We will be happy to answer any questions you have about the study and your participation in it. All the information collected in this study is for research purposes only and will be kept strictly confidential.

Patient Consent: I have read the above and have had an opportunity to ask questions and receive answers. I desire to participate in this study.

_____ _____

Signature Date

_____
Witness

Family Member Consent: I have read the above and have had an opportunity to ask questions and receive answers. I desire to participate in this study.

_____ _____
Signature Date

_____
Witness

Form 301

APPENDIX B

RISK INDEX

Family History	Diet/Cholesterol	Other Risks
IHD 1° relative $\leq$ 55 = 3	Cholesterol $>$ 270 = 2	Smoking = 1.5
IHD 1° relative $\leq$ 65 = 2.5	Cholesterol $>$ 240 = 1	Diabetes = 1
IHD 2° relative $\leq$ 65 = 1		*no exercise = 1
Stroke 1° relative $\leq$ 55 = 1	Cholesterol $>$ 220 = 0.5	*no exercise but job requires regular physical activity = 0.5
Stroke 2° relative $\leq$ 65 = 0.5		
(Select highest value this column)	(Select highest value in this column)	BP $\geq$ 140/90 or hypertension by history = 0.5
		Relative weight 20 lbs. over desired weight) = 0.5
		Type A = 0.5 ($\geq$ 50% on type A scale Jenkins Activity Survey)

*No exercise = less than 1 hr. per week of aerobic exercise divided into at least three periods no more than 2 days apart.

Note: Adapted from "Genetic-epidemiologic study of early onset ischemic heart disease" by Nora, J.J., Lortscher, R.H., Spangler, R.D., Nora, A.H., and Kimberlind, W.J., Circulation, 1980, 61(3), 503-508.

APPENDIX C

SEVERITY OF MI

1. # Days in Hospital

12	=	0
12-14	=	+1
15-17	=	+2
18-20	=	+3
20+	=	+4

2. Enzymes

500	=	0.5
500-1000	=	+1
1001-1501	=	+2
1501-2500	=	+3
2501-3500	=	+4
3501+	=	+5

3. Killip Score at transfer to floor

Class I	=	0
II	=	+2
III	=	+3
IV	=	+4

4. Complications

extension 1+ score for enzyme peak
reinfarction 1+ score for enzyme peak

Heart Failure

None	=	0
Mild	=	+1
Mod	=	+2
Sev	=	+3

Sinus

Tachycardia = +1 or +2 if treated
Bradycardia = +1 or +2 if treated

Arrhythmias

SA Block	1° block	=	+1	
AV Block	2° block	=	+2	3° block = +3
IV Block	3° block	=	+3	
PAC's		=	+1	
PVC's		=	+2	
VTach		=	+3	
VFib		=	+3	
Bundle BB		=	+1	
AFib		=	+2	
AFlut		=	+2	
Junction Rhythms		=	+1	

Cardiogenic Shock	=	+4
Cardiac Arrest	=	+4
Pul Embolism	=	+3
Drug toxicity or reaction	=	+1
pacemaker	=	+3
infection	=	+1

APPENDIX D

ANALYSIS OF INTERNAL CONSISTENCY

Table 34

Analysis of Internal Consistency of Patient Stress Items Using Cronback's Alpha

Adaptive Task	Number of Items	Alpha Coefficent
Dealing with the symptoms of the illness	6	.72
Dealing with the stress of treatment and procedures	9	.70
Dealing with lifestyle changes	10	.78
Maintaining relationships with health care providers	7	.73
Managing upsetting feelings	7	.71
Preserving self-image and maintaining a sense of control	5	.55
Maintaining relationships with family members	8	.69
Preparing for uncertain future and managing losses	7	.78
Maintaining role responsibilities/return to work	5	.62

Table 35

Analysis of Internal Consistency of Spouse Stress Items Using Cronback's Alpha

Adaptive Task	Number of Items	Alpha Coefficent
Dealing with the symptoms of the illness	7	.87
Dealing with the stress of treatment and procedures	4	.67
Dealing with lifestyle changes	9	.88
Maintaining relationships with health care providers	9	.69
Managing upsetting feelings	9	.88
Preserving self-image and maintaining a sense of control	2	.76
Maintaining relationships with family members	7	.84
Preparing for uncertain future and managing losses	7	.76
Managing role responsibilities/return to work	1	Not calculated

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